Key

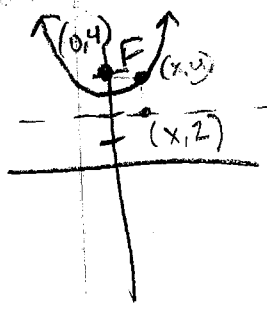
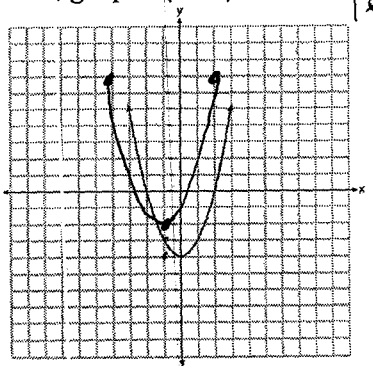
TEACHER : _____

Alg 2 CC Regents June 1st

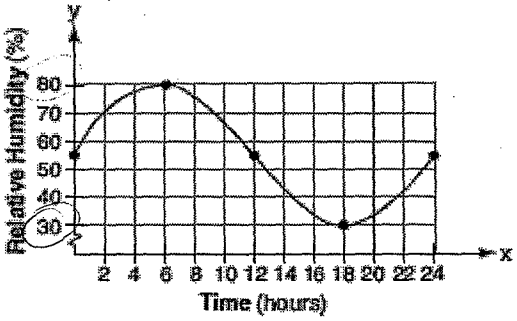
- even vs. odd
- ARCC
- SOAP
- alg. system
- Rat. eq'n
- div.
- asymp.
- $x^4 - 3x^2 - 10 = 0$

Formulas to know - Important things to remember

REVIEW # 1

	Question/WORK	ANSWER
1.	The minimum point on the graph of the equation $y = f(x)$ is $(-1,-3)$. What is the minimum point on the graph of the equation $y = f(x) + 5$? 1) $(-1,2)$ 2) $(-1,-8)$ 3) $(4,-3)$ 4) $(-6,-3)$	(1)
2.	Which transformation of $y = f(x)$ moves the graph 7 units to the left and 3 units down? 1) $y = f(x+7) - 3$ 2) $y = f(x+7) + 3$ 3) $y = f(x-7) - 3$ 4) $y = f(x-7) + 3$	(1)
3.	Derive the equation of a parabola given the focus of (0,4) and the directrix y=2.  $d = \sqrt{(x-0)^2 + (y-4)^2} = d = \sqrt{(x-x)^2 + (y-2)^2}$ $\left(\sqrt{x^2 + (y-4)^2}\right)^2 = \left(\sqrt{(y-2)^2}\right)^2$ $x^2 + (y-4)^2 = (y-2)^2$ $x^2 + y^2 - 8y + 16 = y^2 - 4y + 4$ $-4 \qquad -4$	
4.	The function $f(x)$ is graphed on the set of axes below. On the same set of axes, graph $f(x+1) + 2$. left 1 up 2 	$\frac{x^2 - 8y + 12}{-4} = \frac{-4y}{-4}$ $y = -\frac{1}{4}x^2 + 2y - 3$ $-2y \qquad -2y$ $-y = -\frac{1}{4}x^2 - 3$ $y = \frac{1}{4}x^2 + 3$

5. A meteorologist drew the accompanying graph to show the changes in relative humidity during a 24-hour period in New York City.



What is the range of this set of data?

1) $0 \le y \le 24$

2) $0 \le x \le 24$

(3) $30 \le y \le 80$

4) $30 \le x \le 80$

(3)

6. Factor: $6a^2 + 7ax - 3x^2$

$ac = -18$, $b = 7$, $9, -2$

$6a^2 + 9ax - 2ax - 3x^2$

$3a(2a + 3x) - x(2a + 3x)$

$(3a - x)(2a + 3x)$

7. $6x - 2y - 4z = -8$

Solve the system: $3x - 5y + 5z = -14$

$-6 = -3(x + y - 5z = 6)$

$3x - 5y + 5z = -14$

$+ \quad -3x - 3y + 15z = -18$

$-8y + 20z = -32$

$6x - 2y - 4z = -8$

$+ \quad -6x - 6y + 30z = -36$

$-8y + 26z = -44$

$-8y + 20z = -32$

$-(-8y + 26z = -44)$

$-8y + 20z = -32$

$+ \quad 8y - 26z = 44$

$-6z = 12$

$z = -2$

$-8y + 20(-2) = -32$

$-8y - 40 = -32$

$-8y = 8$ $(y = -1)$

$x = -3$

$y = -1$

$z = -2$

$x - 1 - 5(-2) = 6$

$x - 1 + 10$

$x + 9 = 6$

$x = -3$

8. Multiply $(2x^3+1)(5x^2+4)$ and w e your result in simplest form.

$10x^5+8x^3+5x^2+4$

9. Write an equation of the line, in p nt-slope form, whose slope is 5 and passes through (-5, 3).

$y-3=5(x+5)$

10. Find the slope of the line that pa s through the points $(5,-2)$ and $(20,4)$.

$m=\frac{4+2}{20-5}\quad \frac{6}{15}=\frac{2}{5}$

11. Find the inverse of $f(x)=(x-$ $^3-1$

$x=(y-5)^3+1$

$\sqrt[3]{x+1}=\sqrt[3]{(y-5)^3}$

$\sqrt[3]{x+1}=y-5$

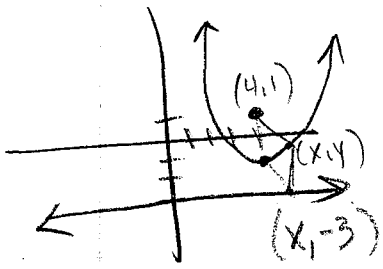
$+5\quad +5$

$f^{-1}(x)=\sqrt[3]{x+1}+5$

REVIEW # 2

	Question/WORK	ANSWER
1.	Solve the system: $\begin{cases} x-2y+z=-11 \\ 3x+2y-z=7 \\ -x+2y+4z=-9 \end{cases}$ $4x=-4$ $x=-1$ $5z=-20$ $z=-4$ $-1-2y-4=11$ $-2y-5=-11$ $+5 \quad +5$ $-2y=-6$ $y=3$	$x=-1$ $y=3$ $z=-4$
2.	Write, in POINT-SLOPE form, the equation of the line that passes through points (-1, 2) and (7, -3). $m=\frac{2+3}{-1-7}=\frac{5}{-8}$ $y-2=-\frac{5}{8}(x+1)$	

3. ~~Use the distance formula to~~ w e the equation of the parabola that is the collection of all points equ istant from (4, 1) and y=-3.



$\sqrt{(x-4)^2+(y-1)^2} = \sqrt{(x-x)^2+(y+3)^2}$

$x^2-8x+16+y^2-2y+1 = y^2+6y+9$
$+2y \quad -9 \quad +2y \quad +9$

$\frac{x^2-8x+8}{8} = \frac{8y}{8}$

$y = \frac{1}{8}x^2 - x + 1$

$\frac{1}{8}(x^2-8x+16)-1$

$\frac{1}{8}x^2 - x + 2 - 1$

$y = \frac{1}{8}x^2 - x + 1$

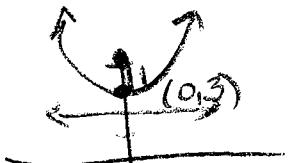
OR $V(4,1)\ p=2$

$y = \frac{1}{8}(x-4)^2 - 1$

4. Which equation represents a p rabola with a focus of (0,4) and a directrix of y=2?

(1) $y = x^2 + 3$ (2 $y = -x^2 + 1$

(3) $y = \frac{1}{2}x^2 + 3$ ((4 $y = \frac{1}{4}x^2 + 3$



$y = \frac{1}{4p}(x-h)^2 + k$

$y = \frac{1}{4(1)}(x-0)^2 + 3$

$y = \frac{1}{4}x^2 + 3$

5. Find the axis of symmetry of t parabola whose equation is $f(x) = -2x^2 - 8x + 5$.

$x = \frac{-b}{2a} = \frac{8}{2(-2} = \frac{8}{-4}$

$x = -2$

6. Find the vertex of the parabol whose equation is $f(x) = -2x^2 - 8x + 5$.

$-2(-2)^2 - 8(-2) + 5$

$-8 + 16 + 5 = 13$

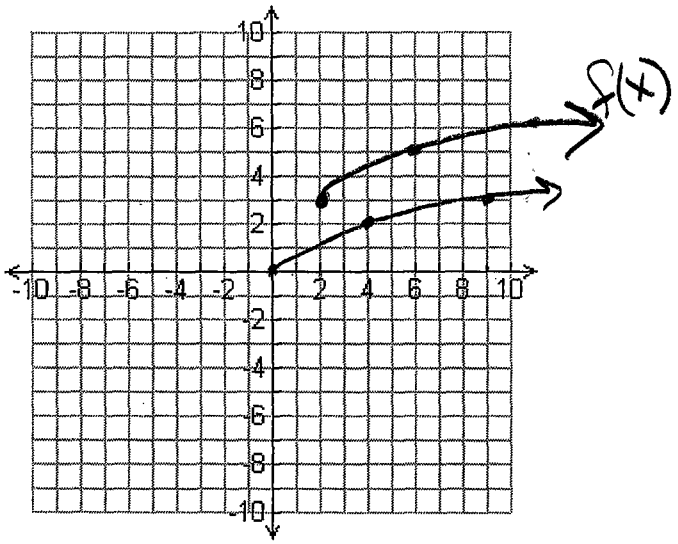
$(-2, 13)$

7. Find the y-intercept of the parabola whose equation is $f(x) = -2x^2 - 8x + 5$.

(0, 5)

8. Graph $f(x) = \sqrt{x-2} + 3$, without a calculator (using transformations). right 2, up 3

$g(x) = \sqrt{x}$



9. State the domain of $f(x) = \sqrt{x-2} + 3$.

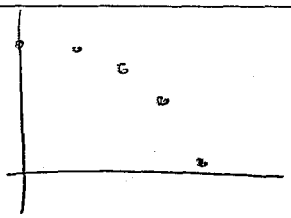
$x \geq 2$

10. State the range of $f(x) = \sqrt{x-2} + 3$.

$y \geq 3$

11. The table below shows the heights, y of a competitive water skier x seconds after jumping off a ramp. **Use your calculator** to write a function that model the height of the water-skier over time. When is the water-skier 5 feet above the water? How long is she in the air?

Time (seconds), x	0	.25	.75	1	1.1
Height (feet), y	22	22.5	17.5	12	9.24



$y = -16x^2 + 6x + 22$

$x = 1.24$ secs.

$x = 1.375$ secs.

REVIEW # 3

	Question/WORK	ANSWER
1.	The relationship between t, a student's test scores, and d, the student's success in college, is modeled by the equation $d = 0.48t + 75.2$. Based on this linear regression model, the correlation coefficient could be 1) between -1 and 0 2) between 0 and 1 3) equal to -1 4) equal to 0	(2)
2.	Factor: $6a^2 + 9ab - 3b - 2a$ $3a(2a+3b) - 1(3b+2a)$ $(3a-1)(2a+3b)$	
3.	Solve $2x^2 - 12x + 4 = 0$ by completing the square, expressing the result in simplest radical form. $x^2 - 6x + 2 = 0$ $x^2 - 6x + 9 = -2 + 9$ $(x-3)^2 = 7$ $x - 3 = \pm\sqrt{7}$ $x = 3 \pm \sqrt{7}$	
4.	The conjugate of $7 - 5i$ is 1) $-7 - 5i$ 2) $-7 + 5i$ 3) $7 - 5i$ 4) $7 + 5i$	(4)
5.	Determine the value of n in simplest form: $i^{13} + i^{18} + i^{31} + n = 0$ $i^1 \; i^2 \; i^3$ $i - 1 + -i + n = 0$	$n = 1$

Why 0? Ignored?

6. Multiply $x + yi$ by its conjugate, and express the product in simplest form.

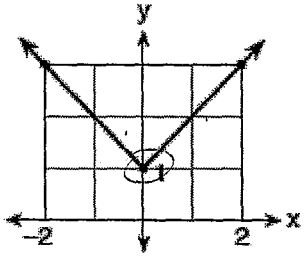
$(x+yi)(x-yi)$

$x^2 - y^2 i^2$

$i^2 = -1$

$x^2 + y^2$

7. Which equation represents the function shown in the accompanying graph?



(1)

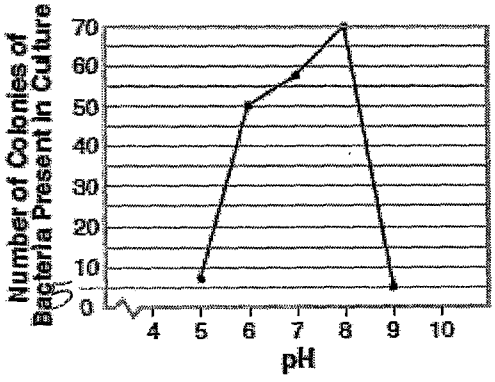
1) $f(x) = |x| + 1$

2) $f(x) = |x| - 1$

3) $f(x) = |x + 1|$

4) $f(x) = |x - 1|$

8. The accompanying graph illustrates the presence of a certain strain of bacteria at various pH levels.



What is the range of this set of data?

$5 \leq y \leq 70$

$[5, 70]$

9. What are the coordinates of the center of a circle whose equation is $x^2 + y^2 - 16x + 6y + 53 = 0$?

1) (−8,−3)
2) (−8,3)
3) (8,−3)
4) (8,3)

$x^2 - 16x + 64 + y^2 + 6y + 9 = -53 + 64 + 9$

$(x-8)^2 + (y+3)^2 = 20$

(8, −3)

(3)

10. 1. Solve the system of equations:

$x = 3$
$5x + 4y = -9$
$-x + 4y - 2z = -25$

$5(3) + 4y = -9$

$15 + 4y = -9$

$-15 \quad -15$

$4y = -24$

$y = -6$

$x = 3$

$y = -6$

$z = -1$

$-3 + 4(-6) - 2z = -25$

$-3 - 24 - 2z = -25$

$-27 - 2z = -25$

$+27 \quad +27$

$-2z = 2$

$z = -1$

REVIEW # 4

	Question/WORK	ANSWER
1.	In an electrical circuit, the voltage, E, in volts, the current, I, in amps, and the opposition to the flow of current, called impedance, Z, in ohms, are related by the equation $E = IZ$. A circuit has a current of $(3 + i)$ amps and an impedance of $(-2 + i)$ ohms. Determine the voltage in $a + bi$ form. $E=IZ$ $E=(3+i)(-2+i) = -6+3i-2i+i^2$ $-6+i-1 \Rightarrow$	$-7+i$
2.	Simplify: $\sqrt{50x^3y^2}$ $\sqrt{25}\sqrt{2}$ $5\sqrt{2}$ $\sqrt{x^3}$ $\sqrt{x^2}\sqrt{x}$ $x\sqrt{x}$ $\sqrt{y^2}$ y why removed?	$5xy\sqrt{2x}$
3.	Solve the system: $-3x-y+6z=-17$ $-3x-5y-5z=21$ $-6x+y+3z=-28$ $-4y+11z=38$ $2(-3x-y+6z=-17)$ $-6x-2y+12z=-34$ $-6x+y+3z=-28$ $4(-3y+9z=-6)$ $3(4y+11z=-38)$ $-12y+36z=-24$ $12y+33z=114$ $69z=138$ $z=2$ $4y+11(-2)=-38$ $4y-22=-38$ $4y=-16$ $y=-4$ $-3x-4+6(2)=17$ $-3x+4+12$ $-3x-8=-17$ $-3x=-9$ $x=3$	$(3,-4,-2)$
4.	Which equation has imaginary roots? b^2-4ac 1) $x^2-2x+1=0$ $(-2)^2-4(1)(1)=4-4=0$ × 2) $x^2-2x-1=0$ $(-2)^2-4(1)(-1)=4+4=8$ × 3) $x^2-2x+5=0$ $(-2)^2-4(1)(5)=4-20=-16$ ✓ 4) $x^2-2x-5=0$ $(-2)^2-4(1)(-5)=4+20=24$ ×	(3)

5. The data table below shows water temperatures at various depths in an ocean.

Water Depth ((meters)	Temperature (y) (°C)
50	18
75	15
100	12
150	7
200	1

255

Write the linear regression equation for this set of data, rounding all values to the *nearest thousandth*. Using this equation, predict the temperature (°C), to the *nearest integer*, at a water depth of 255 meters.

$y = -.112x + 23.448$

$y = -.112(255) + 23.448$

$= -5°$

6. Factor: $1 - x - x^2 + x^3$

$x^3 - x^2 - x + 1$

$x^2(x-1) - 1(x-1)$

$(x^2-1)(x-1)$

DOTS

$(x+1)(x-1)(x-1)$

$(x^2-1)(x-1)$

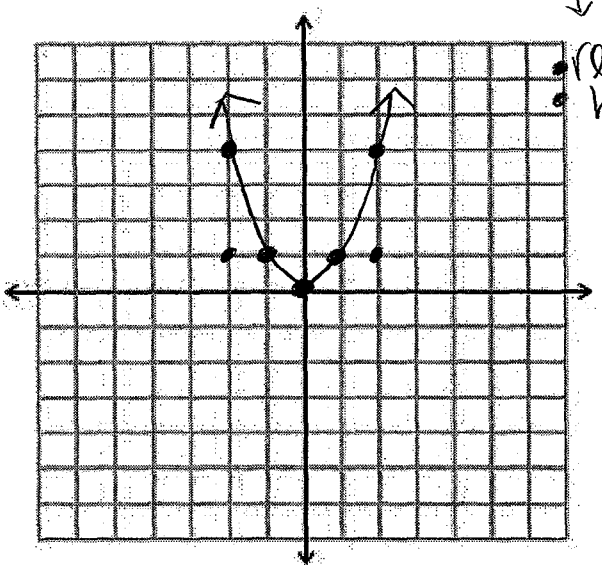
$x^3 - x^2 - x + 1$

$1(1-x) - x^2(1-x)$

$(1-x^2)(1-x)$

$(1+x)(1-x)(1-x)$

7. The graph of g(x) is given below. Graph y=g(-2x) on the same axes.



reflect over y-axis
horiz. shrink by $\frac{1}{2}$

SKIP

8. Write the equation of the line that passes through the points (-4,4) and (2,-1) in **POINT-SLOPE FORM**.

$m = \frac{4+1}{-4-2} = \frac{5}{-6}$ $\quad y-4 = -\frac{5}{6}(x+4)$

OR $\quad y+1 = -\frac{5}{6}(x-2)$

9. Which equation has imaginary roots?

1) $x^2 - 2x + 1 = 0$

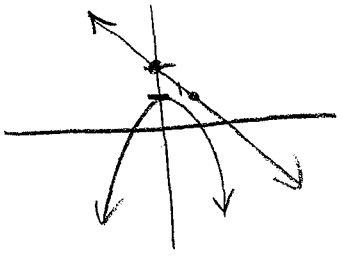
2) $x^2 - 2x - 1 = 0$

3) $x^2 - 2x + 5 = 0$

4) $x^2 - 2x - 5 = 0$

(3)

10. How many points of intersection does the system $\begin{matrix} y = 1 - x^2 \\ y = 2 - x \end{matrix}$ have?



$1 - x^2 = 2 - x$

$-1 + x^2 \quad + x^2 - 1$

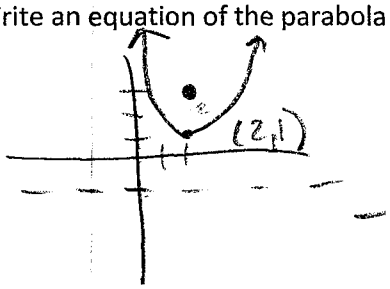
$0 = x^2 - x + 1$

0

$x = \frac{1 \pm \sqrt{1-4(1)(1)}}{2} = \frac{1 \pm \sqrt{-3}}{2}$ → imag.

REVIEW # 5

Just solve... 2 ways!

	Question/WORK	ANSWER
1.	What is the product of the roots of the equation $-2x^2 + 3x + 8 = 0$? $P = \frac{c}{a} = -4$ $x = \frac{-3 \pm \sqrt{9-4(-2)(8)}}{2(-2)} = \frac{-3 \pm \sqrt{73}}{-4}$ $\left(\frac{-3+\sqrt{73}}{-4}\right)\left(\frac{-3-\sqrt{73}}{-4}\right) = \frac{9-73}{16} = \frac{-64}{16} = -4$	-4
2.	What is the sum of the roots of $4x^2 - 5x = 3$? $4x^2 - 5x - 3 = 0$ $S = -\frac{b}{a} = \frac{5}{4}$ $x = \frac{5 \pm \sqrt{25-4(4)(-3)}}{8} = \frac{5 \pm \sqrt{73}}{8} \rightarrow \frac{5+\sqrt{73}}{8} + \frac{5-\sqrt{73}}{8} = \frac{10}{8} = \frac{5}{4}$	$\frac{5}{4}$
3.	Write an equation of the parabola whose focus is (2,3) and directrix is y=-1.  $y = \frac{1}{4(2)}(x-2)^2 + 1$ $y = \frac{1}{8}(x-2)^2 + 1$	
4.	Factor: $a^6 - a^4 - a^2 + 1$ $a^4(a^2-1) - 1(a^2-1)$ $(a^4-1)(a^2-1) = (a^2+1)(a^2-1)(a+1)(a-1)$ $= (a^2+1)(a+1)(a-1)(a+1)(a-1)$	
5.	Which equation has imaginary roots? b^2-4ac 1) $x^2-1=0$ $0-4(1)(-1) = 4$ ✗ 2) $x^2-2=0$ $0-4(1)(-2) = 8$ ✗ 3) $x^2+x+1=0$ $1-4(1)(1) = -3$ ✓ 4) $x^2-x-1=0$ $1-4(1)(-1) = 5$ ✗	

6. The mid-September statewide average gas prices, in dollars per gallon, (y), for the years since 2000, (x), are given in the table below.

Year Since 2000 (x)	Price Per Gallon (y)
1	1.345
2	1.408
3	1.537
4	1.58

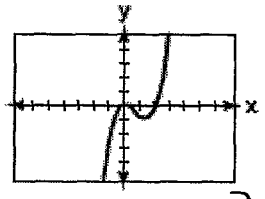
Write a linear regression equation for this set of data. Using this equation, determine how much *more* the actual 2005 gas price was than the predicted gas price if the actual mid-September gas price for the year 2005 was \$2.956.

$y = .0834x + 1.259$

$y = .0834(5) + 1.259 = 1.676$

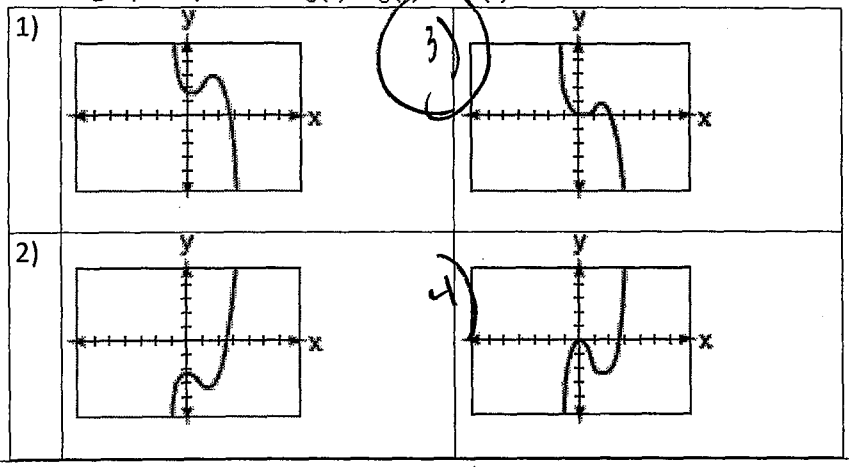
2.956
−1.676
\$1.28

7. The accompanying graph represents the equation $y = f(x)$.



negate y ⇒ reflect in x-axis

Which graph represents $g(x)$ if $g(x) = -f(x)$?



(3)

8. Solve and graph your result on a number line: $2x^2 - 5x - 3 \le 0$

$2x^2 - 6x + 1x - 3 = 0$

$2x(x-3) + 1(x-3) = 0$

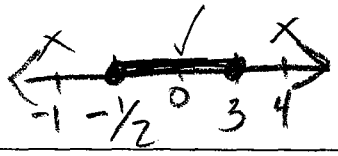
$(2x+1)(x-3) = 0$

$-\frac{1}{2}$ | 3

$ac = -6$

$b = -5$

-6 | 1



$[-\frac{1}{2}, 3]$

9. State the conjugate of $9-\sqrt{11}$.

$9+\sqrt{11}$

10. Solve by factoring: $x^3+7x^2-x-7=0$

grouping: $x^2(x+7)-1(x+7)=0$

roots: $(x^2-1)(x+7)=0$

$(x+1)(x-1)(x+7)=0$

$x=\pm 1, -7$

11. Solve the system algebraically: $x^2+y^2=25$, $4x+3y=0$

$-4x \quad -4x$

$\frac{3y}{3}=\frac{-4x}{3}$

$x^2+\left(\frac{-4}{3}x\right)^2=25$

$\frac{9}{9}x^2+\frac{16}{9}x^2=25$

$(9)\frac{25x^2}{9}=25(9)$

$\frac{25x^2}{25}=\frac{225}{25}$

$x^2=9$

$x=\pm 3$

$3^2+y^2=25$

$y^2=16$

$y=\pm 4$

CK: $4(-3)+3(4)=0$ ✓

$4(3)+3(-4)=$ ✓

$(-3,4)$

$(3,-4)$

12. Find the center and radius of the circle whose equation is $x^2+y^2-2x+4y-11=0$

$x^2-2x+1+y^2+4y+4=11+1+4$

$(x-1)^2+(y+2)^2=16$

$(x-h)^2+(y-k)^2=r^2$

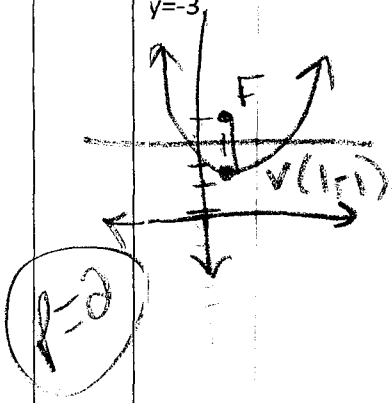
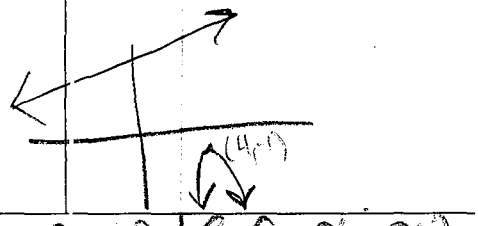
$C:(1,-2)$

$r=4$

REVIEW # 6

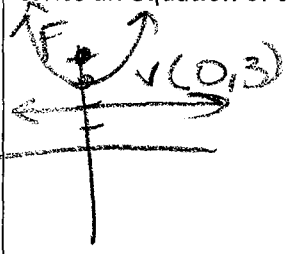
	Question/WORK	ANSWER
1.	Factor Completely: $4x^2+4x-63$ $ac=-252$ $b=4$ $18,-14$ $4x^2+18x-14x-63$ $2x(2x+9)-7(2x+9)$ $(2x-7)(2x+9)$	
2.	Factor Completely: x^4-y^4 $(x^2+y^2)(x^2-y^2)$ $(x^2+y^2)(x+y)(x-y)$	
*	Simplify the expression $(x^2+1)^2-2x^2$ $(x^2+1)(x^2+1)$ $x^4+2x^2+1-2x^2=x^4+1$	
4.	Solve: $x^3+7x^2-x-7=0$ $x^2(x+7)-1(x+7)=0$ $(x+1)(x-1)(x+7)=0$ $x=-1,1,-7$	
5.	State the y-intercept of $f(x)=x^2-6x+2$	$(0,2)$
6.	Find the sum of the roots of $x^2-6x+2=0$. $S=\frac{-b}{a}=\frac{6}{1}$ $x=\frac{6\pm\sqrt{36-4(1)(2)}}{2}=\frac{6\pm\sqrt{28}}{2}$ $\frac{6+\sqrt{28}}{2}+\frac{6-\sqrt{28}}{2}=\frac{12}{2}=6$	6

$\frac{c}{a} = \frac{2}{1}$

7.	Find the product of the roots of $x^2 - 6x + 2 = 0$. $\left(\frac{6+\sqrt{28}}{2}\right)\left(\frac{6-\sqrt{28}}{2}\right) = \frac{36-28}{4} = \frac{8}{4}$	2
8.	Evaluate the discriminant of $x^2 - 6x + 2 = 0$. $b^2 - 4ac = (-6)^2 - 4(1)(2) = 28$	28
9.	Solve $x^2 - 6x + 2 = 0$ by Completing the Square. $x^2 - 6x + \frac{9}{2} = -2 + 9$ $\sqrt{(x-3)^2} = \sqrt{7}$ $x - 3 = \pm\sqrt{7}$ $+3 \quad +3$	$x = 3 \pm \sqrt{7}$
10.	Write an equation of a parabola in which the focus point is (1,1) and directrix is y=-3.  $y = \frac{1}{4p}(x-h)^2 + k$ $y = \frac{1}{8}(x-1)^2 - 1$	
11.	Write a system of two equations in two variables where one equation is quadratic and the other is linear such that the system has no solution. Explain, using graphs, algebra, and/or words, why the system has no solution.  NO INTERSECTION $y = \frac{1}{2}x + 5$ $y = -(x-4)^2 - 1$	

REVIEW # 7

25 pts.

	Question/WORK	ANSWER
1.	Divide using long division: $(x^3+3x^2-x-8)\div(x-1)$ x^2+4x+3 R -5 $x-1 \overline{)x^3+3x^2-x-8}$ $-(x^3-x^2)$ $4x^2-x$ $-(4x^2-4x)$ $3x-8$ $-(3x-3)$ -5 4	
2.	Explain why (x-1) is or is not a linear factor of (x^3+3x^2-x-8). Not a factor b/c there's a remainder 2	
3.	Write an equation of the parabola whose focus is (0,4) and directrix is y=2.  $y=\frac{1}{4}x^2+3$ p=1 3	
4.	Write $(5+2yi)(4-3i)-(5-2yi)(4-3i)$ in $a+bi$ form, where y is a real number. $(4-3i)[(5+2yi)-(5-2yi)]$ $(4-3i)[5+2yi-5+2yi] = (4-3i)(4yi)$ $16yi-12yi^2$ $i^2=-1$ $16yi+12y$ 4	

5. Show that x-4 is a factor of the fun on $f(x) = 2x^3 - 5x^2 - 11x - 4$. Explain your answer.

4 | 2 −5 −11 −4
↓ 8 12 4
2 3 1 0 → remainder

3

$A = B + C$
$-B \quad -B$
$C = A - B$
$C = (24{,}500 - B)$

6. A stadium has 49,000 seats. Seat el for $25 in Section A, $20 in section B, and $15 in section C. The number seats in section A equals the total number of seats in sections B and Suppose the stadium takes in $1,052,000 from each sold-out event. How m y seats does each section hold?

A: $25
B: $20
C: $15 > B+C=,

$A + B + C = 49{,}000$
$A = B + C$
$25A + 20B + 15C = 1{,}052{,}000$
$B + C + B + C = 49000$
$2B + 2C = 49000$
$-2B \quad -2B$
$2C = 49000 - 2B$
$\frac{2C}{2} = \frac{49000 - 2B}{2}$
$C = 24500 - B$

$25(24500) + 20B + 15(24500$
$612500 + 20B + 367500$
$980{,}000 + 5B = 1{,}0$
$5B = 72000$
$B = 14{,}400$

$24500 = 14{,}400 + C$
$C = 10{,}100$

$A = B + 24500 - B$
$A = 24{,}500$

7. Find the axis of symmetry of $f(x = 3x^2 - 6x + 5$.

$x = \frac{6}{2(3)} \Rightarrow x = 1$

8. If $\sqrt{\sqrt[3]{(x+1)^5}} = (x+1)^a$, for x $\neq -1$ and a is constant, what is the value of a?

P/R

$\sqrt{(x+1)^{5/3}}$
$\left((x+1)^{5/3}\right)^{1/2}$
$(x+1)^{5/6} = (x+1)^a$

$a = 5/6$

VIEW # 8

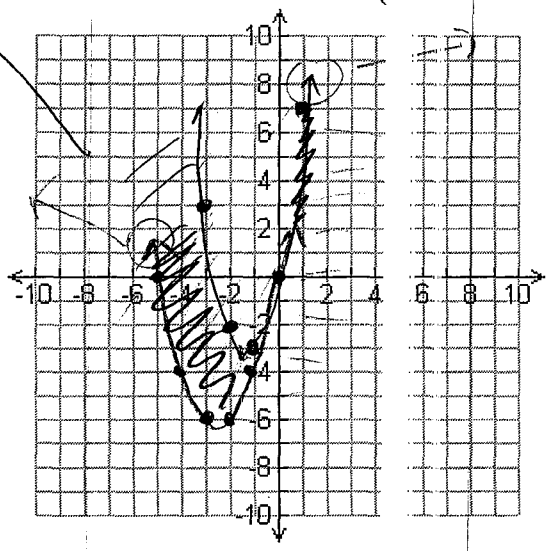
	Question/WORK	ANSWER
1.	Solve the system: $\begin{matrix} 4x-2y+6z=10 \\ -4(x+3y+z=16) \\ 5y-z=19 \end{matrix}$ $4x-2y+6z=10$ $+\ -4x-12y-4z=-64$ $-14y+2z=-54$ $2(5y-z=19)$ $-14y+2z=-54$ $+\ 10y-2z=38$ $-4y=-16$ $\boxed{y=4}$ $5(4)-z=19$ $20-z=19$ $\boxed{z=1}$ $x+3(4)+1=16$ $x+13=16$ $\boxed{x=3}$	
2.	State the conjugate of $5-\sqrt{7}$ $5+\sqrt{7}$	
3.	Solve: $x^2+3x-3=0$ $x=\frac{-3\pm\sqrt{9-4(1)(-3)}}{2(1)}=\frac{-3\pm\sqrt{21}}{2}$	

4. Solve the system by graphing:

$y = x^2 + 5x$ (-2,0) $0 > -6$ ✓

$y = 2x^2 + 5x$ (-1,0) $0 < -3$ ✗

$-5 = -3$



(✗ on calc (#line))

5. Factor completely: $16x^4 - 81y^4$

$(4x^2 - 9y^2)(4x^2 + 9y^2)$

$(2x+3y)(2x-3y)(4x^2+9y^2)$

6. Identify the axis of symmetry, ve x, the maximum or minimum value, AND the range of $y = x^2 + 8x + 18$.

$x = \frac{-8}{2(1)} \Rightarrow$ **x: -4**

R: $y \geq 2$

$y = (-4)^2 + 8(-4) + 18$

$= 16 - 32 + 18 = 2$

(-4, 2) min

7. Find an equation in the form $y = ax^2 + bx + c$ that goes through the points (4,89), (-1,19), and (-2,53).

x y x y x y

$89 = 16a + 4b + c$

$(19 = 1a - 1b + c)(-1)$

$53 = 4a - 2b + c$

$89 = 16a + 4b + c$

$-19 = -1a + 1b - c$

$70 = 15a + 5b$

$53 = 4a - 2b + c$

$-19 = -1a + 1b - c$

$34 = 3a - b$

$5(34 = 3a - b)$

$170 = 15a - 5b$

$+ \quad 70 = 15a + 5b$

$240 = 30a$

$a = 8$

$34 = 3(8) - b$

$34 = 24 - b$

$-24 \quad -24$

$10 = -b$

$b = -10$

$19 = 8 + -10 + c$

$19 = 18 + c$

$c = 1$

8. Show that $2x + 5$ is a linear factor of $6x^4 + 15x^3 - 14x^2 - 27x + 20$. Explain your answer.

$2x + 5 = 0$

$-\frac{5}{2}$ | 6 15 −14 −27 20

↓ −15 0 35 −20

6 0 −14 8 0 = R

$3x^3 + 0x^2 - 7x + 4$

$2x+5 \;\overline{)\; 6x^4 + 15x^3 - 14x^2 - 27x + 20}$

$-(6x^4 + 15x^3)$

$0x^3 - 14x^2$

$-(0x^3 + 0x^2)$

$-14x^2 - 27x$

$-(-14x^2 - 35x)$

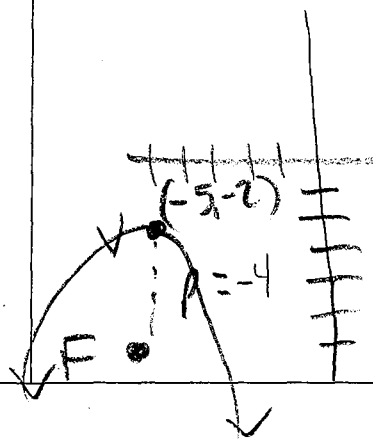
$8x + 20$

$-(8x + 20)$

0

Q: $3x^3 - 7x + 4$ R: 0

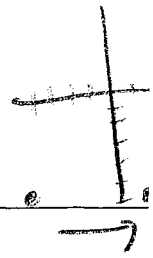
9. Write an equation of the parabola whose VERTEX is (-5,-2) and FOCUS is (-5,-6)



$y = \frac{1}{4(-4)}(x+5)^2 - 2$

$y = \frac{1}{-16}(x+5)^2 - 2$

REVIEW # 9

	Ques on/WORK	ANSWER
1.	Which of the following functions d eases as the input values approach both r egative infinity and positive infini (1) $f(x)=x^3-4x^2+x$ (2) $g(x)=-2x^3-4x^2+9$ (3) $h(x)=x^4-4x^3+2x+8$ (4) $r(x)=-x^4+9x^3+x^2+8x+$	EB: ↓↓ (-) even
2.	Which of the following could ident the transformation of a parabola wit a vertex of (-4, -6) to parabola with a vertex of (1, -6)? (1) $f(x)+5$ (2) $5f(x)$ (3) $f(x+5)$ (4) $f(x-5)$	 right 5
3.	erome uses the polynomial identi $(x^2-y^2)^2+(2xy)^2=(x^2+y^2)^2$ to generate the Pythagorean triple 9 0, 41. What values of x and y did he use to generate the values for the three les of a right triangle? $x^2-y^2=9$ $x^2+y^2=41$ $2x^2=50$ $x^2=25$ $x=\pm 5$ $2xy=40$ $2(5)y=40$ $y=\pm 4$ $x^2+y^2=41$	
4.	Simplify $8i^6+6i^5-5i^3-3i^2-7i$ i^2 i^4 i^6 (-1) $8(-1)+6i+5i+3-$ -8 $i-9$ (calc.)	$-14+4i$
5.	Determine the points of intersect for $x^2+y^2=1$ and $y=x+1$? $x^2+(x+1)^2=1$ $x^2+x^2+2x+1=1$ -1 -1 $2x^2+2x=0$ $2x(x+1)=0$ $x=0$ $x=-1$ $y=1$ $y=0$ $(0,1)$ $(-1,0)$	

6. Solve $\sqrt{(x-5)^2} = \sqrt{-9}$

$X-5 = \pm 3i$

$\boxed{X = 5 \pm 3i}$

7. A boy standing on the top of an apartment building in Albany throws a water balloon up vertically. The height, h (in feet), of the water balloon is given by the equation $h(t) = -16t^2 + 64t + 192$, where t is the time (in seconds) after he threw the water balloon. What is the value of t when the balloon hits the ground? Explain and show how you arrived at your answer.

$0 = -16t^2 + 64t + 192$

$0 = -16(t^2 - 4t - 12)$

$(t-6)(t+2) = 0$

$t = 6$ $t = -2$

8. Divide $(x^3 + 7x^2 + 14x + 3)$ by $(x+2)$. Is $(x+2)$ a factor of $(x^3 + 7x^2 + 14x + 3)$? Explain why or why not.

$$\begin{array}{c|cccc} -2 & 1 & 7 & 14 & 3 \\ & \downarrow & -2 & -10 & -8 \\ \hline & 1 & 5 & 4 & -5 \end{array}$$

NO, remainder is -5

9. Factor completely: $x^4 - 13x^2 + 36$

$(x^2-9)(x^2-4)$

$(x+3)(x-3)(x+2)(x-2)$

10. Solve the system:

$x + 2y - z =$
$+\ 2x + y + z =$
$-(x + 2y + z =$

$-x - 2y - z = -5$
$+\ 2x + y + z = 0$

$x + 2y - z = 3$
$+\ 2x + y + z = 0$

$3x + 3y = 3$
$-3(x - y = 5)$

$3x + 3y = 3$
$+\ -3x + 3y = 15$

$6y = 18$

$y = 3$

$3x + 3(3) = 3$

$3x + 9 = 3$

$3x = -6$

$x = -2$

$-2 + 2(3) - z = 3$

$-2 + 6 - z = 3$

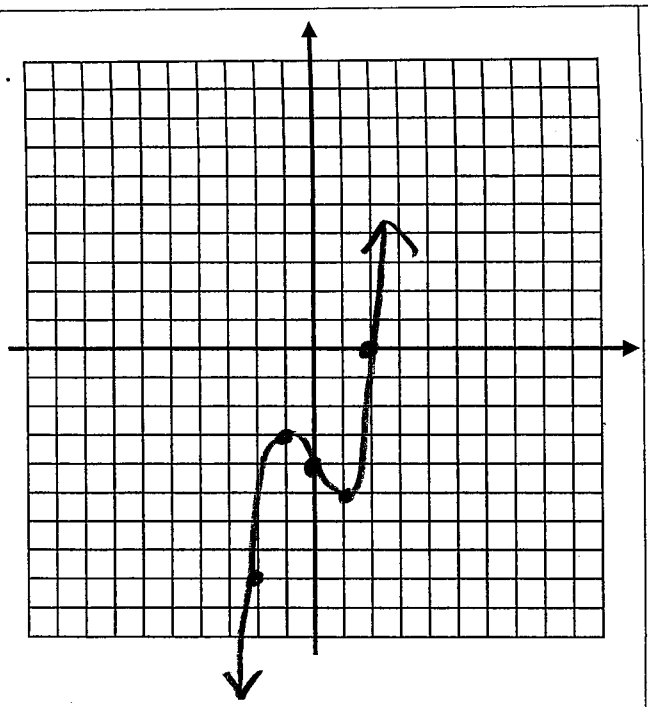
$4 - z = 3$

$z = 1$

$(-2, 3, 1)$

11. Graph $f(x) = x^3 - 2x - 4$.

x	y
-2	-8
-1	-3
0	-4
1	-5
2	0



Based on the graph, what is the real solution to the equation $x^3 - 2x - 4 = 0$?

$x = 2$

Verify algebraically that it is a zero of $f(x)$.

$f(2) = 2^3 - 2(2) - 4 = 8 - 4 - 4 = 0$

Write $f(x)$ as a product of a linear factor and a quadratic factor.

$$2 \mid 1 \quad 0 \quad -2 \quad -4$$
$$\quad\quad\; 2 \quad 4 \quad 4$$
$$1 \quad 2 \quad 2 \quad 0$$

$(x^2 + 2x + 2)(x - 2)$

Find the two complex number zeros of $f(x)$.

$x^2 + 2x + 2 = 0$

$$x = \frac{-2 \pm \sqrt{2^2 - 4(1)(2)}}{2(1)} = \frac{-2 \pm \sqrt{-4}}{2} = \frac{-2 \pm 2i}{2}$$

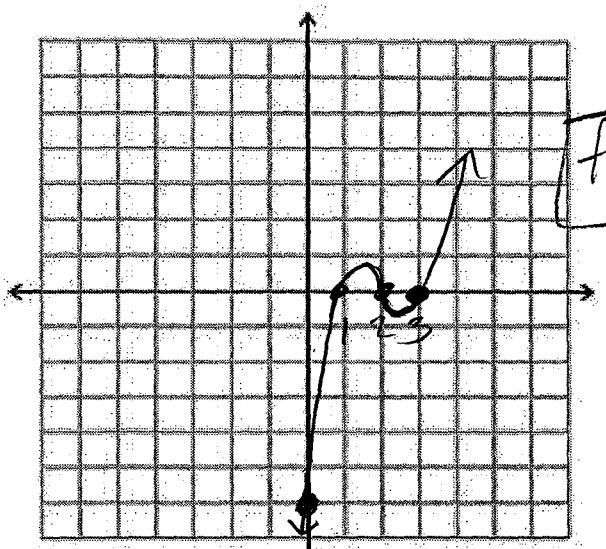
$x = -1 \pm i$

REVIEW # 10

	Question/WORK	ANSWER
1.	Solve: $(-\sqrt{x+10})^2=(-7)^2$ $x+10=49$ $x=39$	
2.	Which equation has non-real solutions? (1) $2x^2+4x-12=0$ (2) $2x^2+3x=4x+12$ (3) $2x^2+4x+12=0$ (4) $2x^2+4x=0$	
3.	Solve: $2x^2-x+1=0$ $x=\frac{1\pm\sqrt{1-4(2)}}{2(2)}$ $=\frac{1\pm\sqrt{-7}}{4}=\frac{1\pm i\sqrt{7}}{4}$	
4.	Find a polynomial function of degree 3 in standard form which has the corresponding table of values: cubic $y=1x^3-2x^2-5x-4$	

X	Y
4	18
3	0
2	-4
1	0
0	6
-1	8
-2	0
-3	-24
-4	-70

5. Use the graph of $f(x) = x^3 - 6x^2 + 11x - 6$ to rewrite f(x) as a product of linear factors.



$f(x) = (x-1)(x-2)(x-3)$

6. Write $-4\sqrt{-48}$ in simplest form.

$-4 \cdot 4i\sqrt{3} = -16i\sqrt{3}$

7. Write $n^{\frac{7}{6}}$ in simplest radical form.

$\sqrt[6]{n^7} = \sqrt[6]{n^6} \cdot \sqrt[6]{n} = n\sqrt[6]{n}$

8. If ~~$h(x)$~~ $y = \frac{x-4}{x+5}$, find $h^{-1}(x)$. inverse

$x = \frac{y-4}{y+5}$

$x(y+5) = y-4$

$xy + 5x = y - 4$

$-xy \quad -xy$

$5x = y - 4 - xy$

$+4 \quad +4$

$5x + 4 = y - xy$

$\frac{5x+4}{1-x} = \frac{y(1-x)}{(1-x)}$

9. Solve: $\frac{4x}{x-3} = 8 + \frac{12}{x-3}$ $(x-3)$

$4x = 8(x-3) + 12$

$4x = 8x - 24 + 12$

$4x = 8x - 12$

$-8x \quad -8x$

$-4x = -12$

$x = 3 \rightarrow$ add to reject! makes denom = 0 + fraction undefined

10. The vertex of a parabola, $f(x)$ has coordinates (-3, 5). Determine the coordinates of the vertex of the parabola defined by $f(x+3)$.

left 3

(-6,5)

11. Solve the system:

$x - 2y + z = 7$ $\quad (-2)$

$2x + y - z = 4$

$-3x + 2y - 2z = -10$

$-2x + 4y - 6z = -14$

$+ \; 2x + y + z = 4$

$5y - 5z = -10$ $\quad (4)$

$3x - 6y + 9z = 21$

$+ \; -3x + 2y - 2z = -10$

$-4y + 7z = 11$ $\quad (5)$

$+ \; 20y - 20z = -40$

$-20y + 35z = 55$

$15z = 15$

$z = 1$

$5y - 5(1) = -10$

$5y = -5$ $\quad y = -1$

$x - 2(-1) + 3(1) = 7$

$x + 5 = 7$

$x = 2$

REVIEW # 11

	Question/WORK	ANSWER
1.	The polynomial $p(x)=2x^3+13x^2+17x-12$ has $(x+4)$ as a factor. (a) Factor the polynomial into three linear terms. $-4 \mid 2 \quad 13 \quad 17 \quad -12$ $\quad\quad\downarrow \quad -8 \quad -20 \quad 12$ $\quad\quad 2 \quad 5 \quad -3 \quad 0$ $2x^2+5x-3$ $(2x-1)(x+3)(x+4)$ (b) Describe the steps you would use to sketch the graph of the function (without a calculator). Identify all intercepts and describe the end behavior of the graph. x-ints/roots: $x=\frac{1}{2}, -3, -4$ y-int: $(0,-12)$ EB: $\downarrow\uparrow$	
2.	Given: $f(x)=x^2-4x$. (a) Write an expression that defines $f(x+5)$. $f(x+5)=(x+5)^2-4(x+5)$ $x^2+10x+25-4x-20$ x^2+6x+5 (b) Describe the transformation that maps the graph of $f(x)$ to $f(x+5)$. left 5	

3. State the period of the graph of $f(x) = -3\cos\left(2x+\frac{\pi}{2}\right)-1$.

$f(x) = -3\cos 2\left(x+\frac{\pi}{4}\right)-1$

$per = \frac{2\pi}{2} = \frac{2\pi}{2} = \pi$

4. Given the two functions $f(x) = x^2$, $g(x) = 3 - x$, simplify $2f(1-x)-3g(x)$

$f(1-x) = (1-x)^2 = 2(1-2x+x^2)$

$= 2-4x+2x^2$

$3(g(x))$

$3(3-x) = 9-3x$

$2x^2-4x+2-(-3x+9)$

$2x^2-4x+2+3x-9$

$2x^2-x-7$

5. Factor completely: $162x^4-144x^2+32$

$ac = 5184$ -72

$b = -144$ -72

$162x^4-72x^2-72x^2+32$

$18x^2(9x^4-4)-8(9x^2-4)$

$2(9x^2-8)(9x^2-4)$

6. Write a quadratic equation in which the sum of the roots is -3 and product of the roots is 5.

$S = -\frac{b}{a} = \frac{-3}{1}$

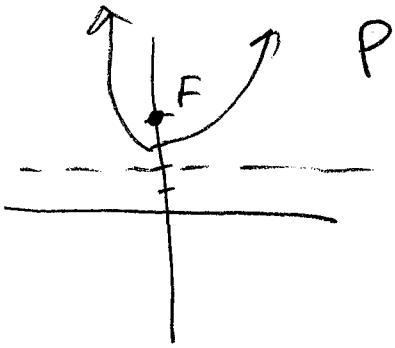
$P = \frac{c}{a} = \frac{5}{1}$

$a = 1$

$b = 3$

$c = 5$

$x^2+3x+5=0$

7.	Simplify $\dfrac{2\left(\sqrt{m}\right)^3}{\sqrt[4]{m}}$ and write your answer with a fraction exponent.	
8.	Write an equation that represents a parabola with a focus of (0,4) and directrix of y=2?  $p=1$ $y=\frac{1}{4}x^2+4$	
9.	Solve: $n=\log_{27} 3$	
10.	If $\sqrt{\sqrt[3]{(x+1)^5}}=(x+1)^a$, for $x\geq -1$ and a is constant, what is the value of a?	

REVIEW # 12

	Question/WORK	ANSWER
1.	For the function $f(x)=(x-3)^3+1$, find $f^{-1}(x)$.	
2.	Factor: $(2a-1)^3+8$ $(2a-1)(2a-1)$ $(4a^2-4a+1)(2a-1)$ $8a^3-4a^2-8a^2+4a+2a-1+8$ $8a^3-12a^2+6a+7$	
3.	State the sum and product of the roots of $3x^2-5x+6=0$ $x=\frac{5\pm\sqrt{25-4(3)(6)}}{6}=\frac{5\pm\sqrt{-47}}{6}=\frac{5\pm i\sqrt{47}}{6}$	
4.	FACTOR COMPLETELY: $k^4+4k^2+8k^3-32k+12k^2-48$ $K^2(K^2-4)+8K(K^2-4)+12(K^2-4)$ $(K^2+8K+12)(K^2-4)$ $(K+6)(K+2)(K+2)(K-2)$	*(Hint: If we factor by grouping with 4 terms ... how about we factor by "chunking" with 6 ... break it into 3 groups of 2. See structure in expressions ... this is on the newly released sample test for Algebra 2. You need to be willing & able to think outside of the box!)*

5.	Rewrite the expression $(4x^2+5x)^2-5(4x^2+5x)-6$ as a product of four linear factors. *(Again – see the structure in expressions – can you see this as x^2-5x-6 ? How does that factor?)* $(x-6)(x+1)$ $(4x^2+5x-6)(4x^2+5x+1)$ $ac=-24$ $b=5$ $8,-3$ $4x^2+8x-3x-6$ $4x(x+2)-3(x+2)$ $(4x-3)(x+2)$ $4x^2+4x+1x+1$ $4x(x+1)+1(x+1)$ $(4x+1)(x+1)$ $ac=4$ $b=5$ $4,1$	
6.	The minimum point on the graph of the equation $y = f(x)$ is $(-1,-3)$. What is the minimum point on the graph of the equation $y = f(x) + 5$? up 5 1) $(-1,2)$ 2) $(-1,-8)$ 3) $(4,-3)$ 4) $(-6,-3)$ $(-1,2)$	
7.	Derive the equation of a parabola given the focus of (0,4) and the directrix y=2. $y=\frac{1}{4}x^2+4$	

8. Write an equation of the line, in [illegible]n-slope form, whose slope is 5 and passes through (-5, 3).

9. Factor: $6a^2 + 7ax - 3x^2$

$ac = -18$ $9 \cdot -2$

$b = 7$

$6a^2 + 9ax - 2ax - 3x^2$

$3a(2a + 3x) - x(2a + 3x)$

$(3a - x)(2a + 3x)$

10. Solve the system:

$$6x - 2y - 4z = -8$$
$$3x - 5y + 5z = -14$$
$$x + y - 5z = 6$$

$-2(3x - 5y + 5z = -14)$

$-3(x + y - 5z = 6)$

$6x - 2y - 4z = -8$

$+ \quad -6x + 10y - 10z = 28$

$8y - 14z = 20$

$3x - 5y + 5z = -14$

$+ \quad -3x - 3y + 15z = -18$

$-8y + 20z = -32$

$+ \quad 8y - 14z = 20$

$6z = -12$

$z = -2$

$8y - 14(-2) = 20$

$8y + 28 = 20$

$8y = -8$

$y = -1$

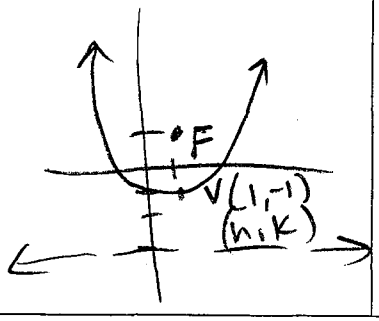
$x - 1 - 5(-2) = 6$

$x - 1 + 10 = 6$

$x + 9 = 6$

$x = -3$

REVIEW # 13

	Question/WORK	ANSWER
1.	Write a quadratic equation in which the roots are $2+i$ and $2-i$. $(x-(2+i))(x-(2-i))$ $((x-2)-i)((x-2)+i)$ FOIL $(x-2)^2 - i^2(-1)$ $x^2-4x+4+1 = x^2-4x+5$	
2.	Graph the function $f(x) = 3\cos(2x) + 1$ between 0 and 2π.	
3.	State the EXACT value of $\sec\frac{5\pi}{6}$	
4.	Consider the parabola with focus point (1, 1) and directrix the horizontal line $y = -3$. Find the equation of the parabola. $y=\frac{1}{8}(x-1)^2-1$  $p=2$	

diff. of cubes - SOAP

5. Factor completely: $(2n-1)^3 - 27$

$(2n-1)(2n-1)$

$((2n-1)-3)\left((2n-1)^2+3(2n-1)+3^2\right)$

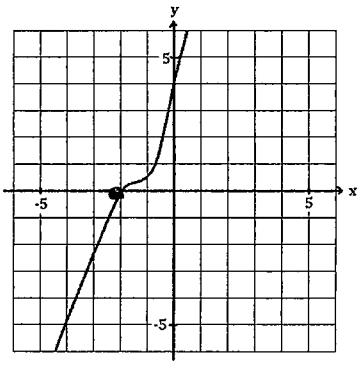
$2n-1-3$ $\quad (4n^2-4n+1+6n-3+9)$

$(2n-4)$ $\quad (4n^2+2n+7)$

6. Write an equation of the line, in point-slope form, that goes through (5, 2) and (2, 5)

$m = \frac{5-2}{2-5} = -1$ $\quad y - 2 = -1(x-5)$

7. The graph of the polynomial function $f(x) = x^3 + 4x^2 + 6x + 4$ is shown below.



a. Based on the appearance of the graph, what does the real solution to the equation $x^3 + 4x^2 + 6x + 4 = 0$ appear to be?

$x = -2$

b. Jiju does not trust the accuracy of the graph. Prove to her algebraically that your answer is in fact a zero of $y = f(x)$?

$(-2)^3 + 4(-2)^2 + 6(-2) + 4 \stackrel{?}{=} 0$

$-8 + 16 - 12 + 4 = 0$

$8 \quad 8 = 0$ ✓

c. Find the two complex number zeros of $x^3 + 4x^2 + 6x + 4 = 0$

$-2 \mid 1 \quad 4 \quad 6 \quad 4$

$\quad\quad\downarrow \quad -2 \quad -4 \quad -4$

$\quad\quad 1 \quad 2 \quad 2 \quad 0$

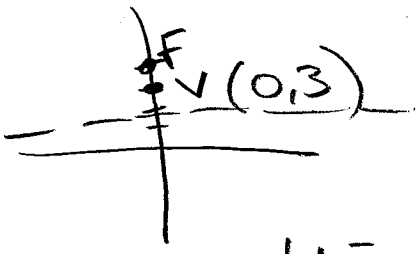
$x^2 + 2x + 2 = 0$

$x = \frac{-2 \pm \sqrt{2^2 - (4 \cdot 1 \cdot 2)}}{2} = \frac{-2 \pm \sqrt{-4}}{2}$

$x = \frac{-2 \pm 2i}{2}$

$x = -1 \pm i$

REVIEW # 14

	Question/WORK	ANSWER
1.	Write an equation of the parabola with a focus of (0, 4) and a directrix of y=2.  $y = \frac{1}{4}x^2 + 3$	
2.	If the terminal side of angle θ, in standard position, passes through point (-4,3), what is the exact numerical value of $\sin\theta$?	
3.	Use the properties of rational exponents to determine the value of y in the equation: $\frac{\sqrt[3]{x^8}}{\left(x^4\right)^{\frac{1}{3}}} = x^y, x > 1$	

4. Write $(5+2yi)(4-3i)-(5-2yi)(4-3i)$ in simplest $a+bi$ form, where y is a real number.

$20-15i+8yi-6yi^2-[20-15i-8yi+6yi^2]$ (-1) (-1)

$20-15i+8yi+6y-20+15i+8yi+6y$

$16yi+12y$

$12y+16yi$

5. Use an appropriate procedure to show that $x-4$ is a factor of the function $f(x)=2x^3-5x^2-11x-4$. Explain your answer.

$$\begin{array}{c|cccc} 4 & 2 & -5 & -11 & -4 \\ & \downarrow & 8 & 12 & 4 \\ \hline & 2 & 3 & 1 & 0 \end{array}$$

Since there is no remainder when dividing by 4, $(x-4)$ is a factor.

6. Solve algebraically for all values of x:

$$\sqrt{x-1}+x=7$$

MT please stop here

7. The ocean tides near Carter Beach follow a repeating pattern over time, with the amount of time between each low and high tide remaining relatively constant. On a certain day, low tide occurred at 8:30 a.m. and high tide occurred at 3:00 p.m. At high tide, the water level was 12 inches above the average local sea level; at low tide it was 12 inches below the average local sea level. Assume that high tide and low tide are the maximum and minimum water levels each day, respectively.

Write a cosine function of the form $f(t) = A\cos(Bt)$, where A and B are real numbers, that models the water level, $f(t)$, in inches above or below the average Carter Beach sea level, as a function of the time measured in t hours since 8:30 a.m.

Graph one cycle of this function.

People who fish in Carter Beach know that a certain species of fish is most plentiful when the water level is increasing. Explain whether you would recommend fishing for this species at 7:30 p.m. or 10:30 p.m. using evidence from the given context.

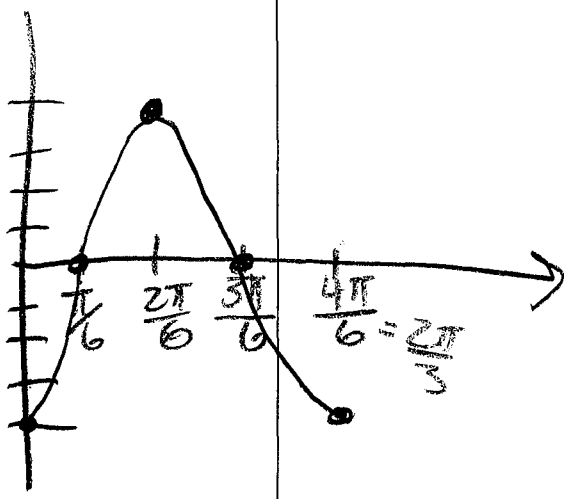
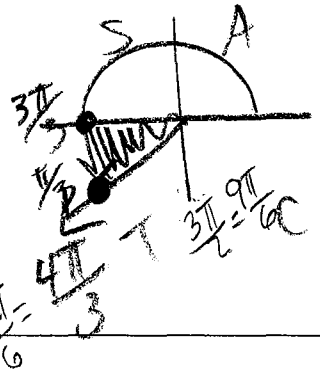
REVIEW # 15

	Question/WORK	ANSWER
1.	Solve for all values of x: $\frac{3x+25}{x+7} - = \frac{3}{x}$	
2.	Divide: $\frac{6x^3+17x^2+10x+2}{2x+3}$	
3.	Use your answer to #2 to determin f $2x+3$ is a linear factor of $6x^3+17x^2+10x+2$	
4.	Write a quadratic equation whose ots are $2\pm\sqrt{3}$.	

5.	Solve: $-\frac{1}{2}x^2 = -6x + 20$	
6.	Factor completely: $n^4 - 4n^2 + 8n^3 - 32n + 12n^2 - 48$	
7.	Solve the system algebraically: $y = -2x + 1$ $y = -2x^2 + 3x + 1$	

8.	Algebraically prove that the difference of the squares of any two consecutive integers is an odd integer.	
9.	Given that $x > 0$, which expression is equivalent to $5\sqrt{xy} + 25\sqrt{x}$? (a) $5(xy)^{-1} + 25x^{-1}$ (b) $25x^{\frac{1}{2}}(\sqrt{y} + 5)$ (c) $\sqrt{x}\left(25y^{\frac{1}{2}} + 5\right)$ (d) $5x^{\frac{1}{2}}\left(y^{\frac{1}{2}} + 5\right)$	
10.	Solve: $n = \log_{27} 3$	

REVIEW # 16

	Question/WORK	ANSWER
1.	If $f(x)=2x^5$, find $f \circ f^{-1}(-23)$ $x=2y^5$ $\frac{x}{2}=\frac{2y^5}{2}$ $\sqrt[5]{\frac{x}{2}}=\sqrt[5]{y^5}$ $f^{-1}(-23)=\sqrt[5]{\frac{-23}{2}}=-1.629819719$ $=-23$	
2.	Graph $g(x)=-4\cos 3x$ $a=-4$ / amp $=4$ $b=3$ period $=\frac{2\pi}{3}$ xscale $=\frac{2\pi}{3}=\frac{2\pi}{4}=\frac{2\pi}{3}\cdot\frac{1}{4}=\frac{\pi}{6}$ 	
3.	Rewrite $\sqrt[5]{x^3}$ with a rational exponent. $x^{3/5}$	
4.	State the exact value of $\csc\frac{4\pi}{3}$ Q III R $\pi/3=60°$ F csc | sin S −  $-\sin 60°=\frac{-\sqrt{3}}{2}\rightarrow\frac{-2}{\sqrt{3}}\cdot\frac{\sqrt{3}}{\sqrt{3}}=$	$\frac{-2\sqrt{3}}{3}$

5. Two versions of a standardized test are given, an April version and a May version. The statistics for the April version show a mean score of 480 and a standard deviation of 24. The statistics for the May version show a mean score of 510 and a standard deviation of 20. Assume the scores are normally distributed.

April
$\bar{x} = 480$
$\sigma = 24$

May
$\bar{x} = 510$
$\sigma = 20$

(a) Joanne took the April version and scored in the interval 510-540. What is the probability, to the nearest ten-thousandth, that a test paper selected at random from the April version scored in the same interval?

$z = \frac{510-480}{24} = 1.25$

$z = \frac{540-480}{24} = 2.5$

normalcdf(1.25, 2.5) = .0994

(b) Maria took the May version. What interval must Maria score to claim she scored as well as Joanne?

$z = \frac{x-510}{20} = 1.25$

$x - 510 = 25$
$x = 535$

$z = \frac{x-510}{20} = 2.5$

$x - 510 = 50$
$x = 560$

535-560

6. Simplify: $\dfrac{\frac{1}{x-8}}{1-\frac{1}{x-8}}$

$\frac{1}{x-8}$

$\frac{x-8-1}{x-8} = \frac{x-9}{x-8}$

$= \frac{1}{x-8} \cdot \frac{x-8}{x-9}$

$= \frac{1}{x-9}$

7. State the midline of $h(x) = -2\cos\left(3x - \frac{\pi}{4}\right) + 1$

$y =$

8. Solve the system:

$$\begin{aligned} -3x+2y-2z&=10 \\ -2(6x-3y-z&=4)\ 2 \\ -4x+5y+2z&=4 \end{aligned}$$

$-3x+2y-2z=10$

$+\ -12x+6y+2z=-8$

$-15x+8y=2$

$12x-6y-2z=8$

$+\ -4x+5y+2z=4$

$8(8x-y=12)$

$+\ -15x+8y=2$

$+\ 64x-8y=96$

$49x=98$

$\boxed{x=2}$

$8(2)-y=12$

$16-y=12$

$\boxed{y=4}$

$-3(2)+2(4)-2z=10$

$-6+8-2z=10$

$2-2z=10$

$-2 \quad -2$

$-2z=8$

$\boxed{z=-4}$

sum/diff of cubes: $x^3+y^3=(x+y)(x^2-xy+y^2)$ (S, O, AP)

$x^3-y^3=(x-y)(x^2+xy+y^2)$ (S, O, AP)

9. Factor: $64x^3-27$

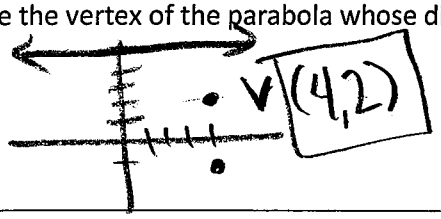
$\sqrt[3]{64x^3}=4x$

$\sqrt[3]{27}=3$

$(4x-3)((4x)^2+3(4x)+3^2)$

$\boxed{(4x-3)(16x^2+12x+9)}$

10. State the vertex of the parabola whose directrix is y=5 and focus is (4, -1).



$\boxed{(4,2)}$

REVIEW # 17

	Question/WORK	ANSWER
1.	Given: $h(x)=\frac{2}{9}x^3+\frac{8}{9}x^2-\frac{6}{3}x+2$ $k(x)=-\lvert 0.7x\rvert+5$ State the solutions to the equation $h(x)=k(x)$, rounded to the nearest hundredth.	
2.	Find the exact roots of x^2+10x- = 0 by completing the square.	
3.	Find the difference when $\frac{4}{3}x^3-\frac{5}{8}$ $+\frac{7}{9}x$ is subtracted from $2x^3+\frac{3}{4}x^2-\frac{2}{9}$	

4.	Prove that the equation shown below is an identity for all values for which the functions are defined: $\csc\theta \cdot \sin^2\theta \cdot \cot\theta = \cos\theta$	
5.	Factor completely: $x^3 + 3x^2 + 2x + 6$	
6.	What is the amplitude of the graph represented by $f(x) = -3cos\frac{\theta}{3}$?	
7.	Solve algebraically for x: $\sqrt{2x+1} + 4 = 8$	

8.	What is the period of the graph re esented by $f(x) = -3cos\frac{\theta}{3}$?	
9.	The legs of a right triangle are rep ented by $x+\sqrt{2}$ and $x-\sqrt{2}$. Find the exact length of the hypotenuse of e right triangle.	
10.	If $f(x) = 2x^2 - 3x + 4$, then what $f(x+3)$ equal to?	
11.	What is the sum of the roots of the uation $-3x^2 + 6x - 2 = 0$?	

REVIEW # 18

	Question/WORK	ANSWER
1.	Which angle does *not* terminate in Quadrant IV when drawn on a unit circle in standard position? (1) -300° (2) -50° (3) 280° (4) 1030°	
2.	A survey is to be conducted in a small upstate village to determine whether or not local residents should fund construction of a skateboard park by raising taxes. Which segment of the population would provide the most unbiased responses? (1) a club of local skateboard enthusiasts (2) senior citizens living on fixed incomes (3) a group opposed to any increase in taxes (4) every tenth person 18 years of age or older walking down Main St.	
3.	Write the expression $\dfrac{\left(\frac{y}{y}\right)\frac{1}{x}+\frac{3}{y}\left(\frac{y}{x}\right)}{\frac{2}{xy}}$ in simplest form.	
4.	Rewrite in simplest exponential form: $\sqrt[3]{27a^{-6}b^3c^2}$	$3a^{-2}b\sqrt[3]{c^2}$

5. Express $\frac{x}{x-1} - \frac{1}{2-2x}$ as a single fraction in simplest form.

$\left(\frac{-2}{-2}\right)$ $(-2x+2)$ $2(1-x)$ $(2-2x)$

$\frac{-2x-1}{2(1-x)} = \frac{-1(2x+1)}{2-2x}$

6. What is the product of the roots of the equation $-3x^2+6x-2=0$?

$P = \frac{c}{a} = \frac{-2}{-3} = \frac{2}{3}$

7. The scores of 1000 students on a standardized test were normally distributed with a mean of 50 and standard deviation of 5. What is the expected number of students who had scores greater than 60?

(2 St. dev.)

$z = \frac{60-50}{5} = 2$

normalcdf(2, 1E99) = .0225

$\times 1000$

22.75

22

8. Find the value of the discriminant $4(x^2-1) = -3x$.

$4x^2 - 4 + 3x = 0$

$4x^2 + 3x - 4 = 0$

$b^2 - 4ac = 3^2 - 4(4)(-4) = 73$