Geo Lab per. 5/9

9/21 Topic: Writing an Equation of a Perpendicular Bisector

Steps:

1) Find the slope(m)
2) $\perp m$ (Change sign, Flip fraction)
3) Find Midpoint
4) Write the eqn., using $\perp m$ and Midpoint

$y - y_1 = m(x - x_1)$

Ex. 1: Write an eqn. of the $\perp$ bisector, given: A(8,2), B(0,6)

1) $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{6-2}{0-8} = \frac{4}{-8} = -\frac{1}{2}$
2) $\perp m = 2$
3) $M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

$M = \left(\frac{8+0}{2}, \frac{2+6}{2}\right) = \left(\frac{8}{2}, \frac{8}{2}\right) = (4,4)$

4) $y - y_1 = m(x - x_1)$

$y - 4 = 2(x - 4)$

Ex 2. Write an eqn. of the ⊥ bisector, given:
$C(\overset{x_1}{-4}, \overset{y_1}{3})$ and $D(\overset{x_2}{6}, \overset{y_2}{2})$.

1) $m = \frac{3-2}{-4-6} = \frac{1}{-10}$

2) $\boxed{\perp m = 10}$

3) $M = \left(\frac{-4+6}{2}, \frac{3+2}{2}\right)$

$= \left(\frac{2}{2}, \frac{5}{2}\right)$

$= \boxed{\left(1, \frac{5}{2}\right)}$ or $(1, 2.5)$

4) $\boxed{y - \frac{5}{2} = 10(x-1)}$