1. $\left(\frac{2}{3}\right)^{-2}$ $\frac{1}{\left(\frac{2}{3}\right)^2} = \frac{1}{\frac{4}{9}} = \boxed{\frac{9}{4}}$

2. $\left(\frac{1}{25}\right)^{\frac{1}{2}}$ $\sqrt[2]{\frac{1}{25}} = \boxed{\frac{1}{5}}$

3. $\left(\frac{1}{25}\right)^{-\frac{1}{2}}$ $\sqrt[2]{\frac{25}{1}}^{-1} = \frac{1}{5}^{-1} = \boxed{5}$

4. $\left(\frac{1}{3}\right)^{-2}$ $\frac{1}{\left(\frac{1}{3}\right)^2} = \frac{1}{\frac{1}{9}} = \boxed{9}$

5. $(27)^{\frac{-2}{3}}$ $\sqrt[3]{27}^{-2} = 3^{-2} = \boxed{\frac{1}{9}}$

6. $(27)^{\frac{2}{3}}$ $\sqrt[3]{27}^{2}$ $3^2 = \boxed{9}$

7. $(-8)^{\frac{1}{3}}$ $\sqrt[3]{-8} = \boxed{-2}$

8. $(-8)^{\frac{-1}{3}}$ $\sqrt[3]{-8}^{-1} = \boxed{\frac{1}{-2}}$

9. $(-2)^3$ $-2 \cdot -2 \cdot -2$ $4 \cdot -2$ $\boxed{-8}$

10. $\left(\frac{-1}{2}\right)^{-3}$ $\left(\frac{-1}{2}\right)^3$ $\frac{1}{-\frac{1}{8}} = \boxed{-8}$

11. $\left(\frac{2}{3}\right)^0$ $\boxed{1}$

12. $\left(\frac{49}{100}\right)^{\frac{-1}{2}}$ $\sqrt[2]{\frac{49}{100}}^{-1} = \frac{1}{\frac{7}{10}} = \boxed{\frac{10}{7}}$

13. $\left(\frac{2^3 \cdot 4}{3}\right)^{-2}$ $\left(\frac{2^3 \cdot 2^2}{3}\right)^{-2} = \left(\frac{2^5}{3}\right)^{-2} = \frac{3^2}{2^{10}}$ $\boxed{\frac{9}{1,024}}$

14. $\left(\frac{2^3 \cdot 4^{-1}}{3^{-1}}\right)^{-2}$ $\left(\frac{2^3 \cdot 3^1}{2^2}\right)^{-2} = \frac{2^4}{6^2} = 6^{-2}$ $\boxed{\frac{1}{36}}$

15. $\left(\frac{9^3}{3}\right)^{-2}$ $\frac{(3^2)^3}{3^1} = \frac{3^6}{3^1} = (3^5)^{-2} = \boxed{\frac{1}{3^{10}}}$

16. $(2^3 \cdot 4)^{\frac{1}{5}}$ $\sqrt[5]{32} = \boxed{2}$

17. $\left(\frac{9^2}{3^2}\right)^{-2}$ $\left(\frac{81}{9}\right)^{-2} \rightarrow \frac{9^2}{81^2} \rightarrow \boxed{\frac{9}{81}}$

18. $\left(\frac{2^3}{4}\right)^{-2}$ $\frac{2^3}{2^2}$ $(2^1)^{-2} = 2^{-2} = \boxed{\frac{1}{4}}$

$2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$

$4 \cdot 4 \cdot 2$

$16 \cdot 2 = 32$