

Powers Review

1. Write $186^{4/5}$ as a radical. $\sqrt[5]{186^4}$
2. Write $\sqrt[8]{\left(\frac{684}{15}\right)^{11}}$ as a power. $\left(\frac{684}{15}\right)^{11/8}$
3. Evaluate $0.09^{1/2}$ without using a calculator. (Express as a radical and then evaluate)
4. Evaluate $(-8)^{-1/3}$ without using a calculator. (Express as a radical and then evaluate)
5. Evaluate $\left(\frac{16}{625}\right)^{1/4}$ without using a calculator. (Express as a radical and then evaluate)
6. Evaluate $\left(\frac{125}{8}\right)^{4/3}$.
 - a. $\frac{625}{4}$
 - b. 7.858 958...
 - c. $\frac{625}{16}$
 - d. 625

$$\begin{aligned} \textcircled{3} \left(\frac{9}{100}\right)^{1/2} &= \sqrt{\frac{9}{100}} \\ &= \frac{3}{10} \end{aligned}$$

$$\begin{aligned} \textcircled{4} (-8)^{-1/3} &= \frac{1}{(-8)^{1/3}} \\ &= \frac{1}{\sqrt[3]{-8}} \\ &= \frac{1}{-2} \end{aligned}$$

$$\begin{aligned} \textcircled{5} \sqrt[4]{\frac{16}{625}} &= \frac{2}{5} \\ \textcircled{6} \sqrt[3]{\frac{125}{8}} &= \left(\frac{5}{2}\right)^4 \\ &= \frac{625}{16} \end{aligned}$$

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7. Evaluate 2^{-3} without using a calculator.

8. Evaluate $\left(\frac{2}{3}\right)^{-3}$.

9. Simplify $x^{-2}y^6 \cdot x^3y^{-8}$. Write using powers with positive exponents.

10. Simplify $\frac{12p^3q^{-7}}{15pq^6}$. Write using powers with positive exponents.

11. Evaluate $\left(-\frac{8}{5}\right)^{\frac{7}{4}} \cdot \left(-\frac{8}{5}\right)^{\frac{1}{4}}$.

12. Simplify $\frac{(5b^7)^3}{(2a^3)^4} = \frac{5^3 b^{21}}{2^4 a^{12}}$

⑦ 2^{-3}
 $= \frac{1}{2^3}$
 $= \frac{1}{8}$

⑧ $\left(\frac{2}{3}\right)^{-3}$
 $= \left(\frac{3}{2}\right)^3$
 $= \frac{27}{8}$

⑪ $\left(-\frac{8}{5}\right)^{\frac{8}{4}}$
 $\left(-\frac{8}{5}\right)^2$
 $\frac{64}{25}$

12. Simplify $\frac{(5b^7)^3}{(2a^3)^4} = \frac{5^3 b^{21}}{2^4 a^{12}} = \frac{125 b^{21}}{16 a^{12}}$

13. Simplify $\frac{(m^3 n^{-3})^{-1}}{(m^{-2} n)^4} = \frac{m^{-3} n^3}{m^{-8} n^4} = \frac{m^5 n^{-1}}{1} = \frac{m^5}{n}$

Evaluate:

a) $2401^{3/4}$
 $\sqrt[4]{2401}^3$
 7^3
 343

b) $32^{-0.4}$
 $= 32^{-4/10}$
 $= 32^{-2/5}$
 $= \frac{1}{32^{2/5}}$
 $= \frac{1}{\sqrt[5]{32^2}}$
 $= \frac{1}{2^2} = \frac{1}{4}$

Simplify:

a) $\left(\frac{(6x^8 y^{-3} \cdot x^{11} y^3)}{(2xy^7)}\right)^{-2}$
 $\left(\frac{6x^{19} y^0}{2xy^7}\right)^{-2}$
 $(3x^{18} y^{-7})^{-2}$
 $\frac{3^{-2} x^{-36} y^{14}}{1} = \frac{y^{14}}{3^2 x^{36}}$

b) $\left(\frac{5^6 x^3 y^5}{5x^{-2} y^3}\right)^3$
 $(5^5 x^5 y^2)^3$
 $5^{15} x^{15} y^6$