

8.1-8.3: Exponents

$$8.1 \left\{ \begin{array}{l} X^a \cdot X^b = X^{a+b} \\ (X^a)^b = X^{a \cdot b} \end{array} \right.$$

$$8.3 \left\{ \frac{X^a}{X^b} = X^{a-b} \right.$$

$$8.2 \left\{ \begin{array}{l} X^0 = 1 \\ X^{-a} = \frac{1}{X^a} \\ \frac{1}{X^{-a}} = X^a \end{array} \right.$$

469 # 1-12

$$\textcircled{1} 3^3 \cdot 3^4 = 3^7 = 2,187$$

$3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3$

$$\textcircled{2} (2^2)^4 = 2^8 = 256$$

$$\textcircled{3} [(8+2)^2]^2$$

$(8+2)^4$
 $10^4 = 10,000$

$$\textcircled{4} 7^{-4} = \frac{1}{7^4} = \frac{1}{2401}$$

$$\textcircled{5} 4^{-3} \cdot 4^{-4} = \frac{1}{4^3 \cdot 4^4} = \frac{1}{4^7}$$

$\frac{1}{16,384}$

$$\textcircled{6} \left(\frac{6}{7}\right)^{-1} = \frac{6^{-1}}{7^1} = \frac{7}{6}$$

$$\textcircled{7} \frac{5^{-3}}{5^2} = \frac{1}{5^2 \cdot 5^3} = \frac{1}{5^5} = \frac{1}{3125} \textcircled{10}$$

$$\frac{(-2)^9}{(-2)^2} = (-2)^7 = -128$$

$$\textcircled{8} \frac{3^4 \cdot 3^6}{3^2} = \frac{3^{10}}{3^2} = 3^8 = 6561$$

$$\textcircled{11} 6^0 \cdot \frac{1}{4^{-3}} = 1 \cdot 4^3 = 64$$

$$\textcircled{9} \left(\frac{5}{4}\right)^{-3} = \frac{5^{-3}}{4^{-3}} = \frac{4^3}{5^3} = \frac{64}{125} \textcircled{12}$$

$$\frac{2^3 \cdot 2^{-4}}{2^{-3}} = \frac{2^3 \cdot 2^3}{2^4} = \frac{2^6}{2^4} = 2^2 = 4$$