

Solutions to WS 8.1 - Evaluating Expressions with Exponents, #1-35 odd

$$\begin{aligned} \textcircled{1} \quad & 3^2 \\ & = 3 \cdot 3 \\ & = \textcircled{9} \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad & -(9)^2 \quad \text{base} \\ & = -(9 \cdot 9) \quad \text{is} \\ & = \textcircled{-81} \quad \text{positive } 9 \end{aligned}$$

$$\begin{aligned} \textcircled{5} \quad & (-8)^2 \quad \text{Remember: the base can only} \\ & = -8 \cdot -8 \quad \text{be negative when the negative} \\ & = \textcircled{64} \quad \text{sign is inside parenthesis!} \end{aligned}$$

$$\begin{aligned} \textcircled{7} \quad & \left(\frac{1}{2}\right)^4 \\ & = \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \\ & = \frac{1^4}{2^4} = \textcircled{\frac{1}{16}} \end{aligned}$$

$$\begin{aligned} \textcircled{9} \quad & \left(\frac{1}{5}\right)^2 \\ & = \frac{1}{5} \cdot \frac{1}{5} \\ & = \frac{1^2}{5^2} = \textcircled{\frac{1}{25}} \end{aligned}$$

$$\begin{aligned} \textcircled{11} \quad & (-6)^3 \\ & = (-6) \cdot (-6) \cdot (-6) \\ & = \textcircled{-216} \end{aligned}$$

$$\begin{aligned} \textcircled{13} \quad & (7-5)^2 \quad \text{Remember} \\ & = (2)^2 \quad \text{PEMDAS!} \\ & = \textcircled{4} \end{aligned}$$

$$\begin{aligned} \textcircled{15} \quad & -(5-1)^2 \quad \text{negative} \\ & = -(4)^2 \quad \text{not inside ()} \\ & = -(4 \cdot 4) \quad \text{base is positive} \\ & = \textcircled{-16} \end{aligned}$$

$$\begin{aligned} \textcircled{17} \quad & -\left(-\frac{2}{3}\right)^2 \\ & = -\left(-\frac{2}{3} \cdot -\frac{2}{3}\right) \\ & = -\left(\frac{4}{9}\right) = \textcircled{-\frac{4}{9}} \end{aligned}$$

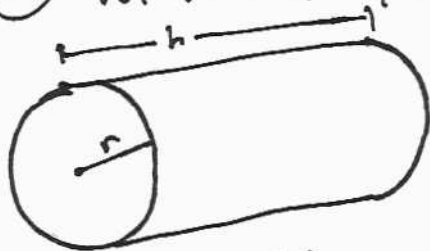
$$\begin{aligned} \textcircled{19} \quad & x^4 \quad \text{if } x=1 \\ & = (1)^4 \\ & = \textcircled{1} \end{aligned}$$

$$\begin{aligned} \textcircled{21} \quad & k^3 \quad \text{if } k=2 \\ & = (2)^3 \\ & = \textcircled{8} \end{aligned}$$

$$\begin{aligned} \textcircled{23} \quad & 2m^3w^2 \quad \text{if } m=0, w=-2 \\ & = 2(0)^3(-2)^2 \\ & = 2(0)(4) \\ & = \textcircled{0} \end{aligned}$$

$$\begin{aligned} \textcircled{25} \quad & 2x^2 - 3x + 4 \quad \text{if } x=-3 \\ & = 2(-3)^2 - 3(-3) + 4 \\ & = 2(9) - 3(-3) + 4 \\ & = 18 + 9 + 4 \\ & = \textcircled{31} \end{aligned}$$

$\textcircled{27}$ Volume of a cylinder



$$\begin{aligned} V &= \pi r^2 h \\ \text{if } r &= 2, h = 3 \\ \pi &\approx 3.14 \end{aligned}$$

$$\begin{aligned} V &= \pi (2)^2 (3) \\ V &= \pi (4) (3) \\ V &= (3.14) (4) (3) \\ V &= \textcircled{37.68} \end{aligned}$$

↑ means
"approximately
equal to"

$$\begin{aligned} \textcircled{29} \quad & \underline{KE} = \frac{1}{2}mv^2 \quad \text{if } m=30 \\ & v=12 \end{aligned}$$

$$\begin{aligned} \underline{KE} &= \frac{1}{2}(30)(12)^2 \\ \underline{KE} &= \frac{1}{2}(30)(144) \\ \underline{KE} &= (15)(144) \\ \underline{KE} &= \textcircled{2160} \end{aligned}$$

(# 31-35: $a=3$, $b=4$, $c=-1$)

$$\begin{aligned} \textcircled{31} \quad & a \cdot b \cdot b \cdot c \\ & = (3) \cdot (4) \cdot (4) \cdot (-1) \\ & = \textcircled{-48} \end{aligned}$$

$$\begin{aligned} \textcircled{33} \quad & b \cdot b \cdot (c \cdot c) \\ & = (4) \cdot (4) \cdot (-1 \cdot -1) \\ & = 4 \cdot 4 \cdot 1 \\ & = \textcircled{16} \end{aligned}$$

$$\begin{aligned} \textcircled{35} \quad & b \cdot c \cdot a \cdot a \\ & = 4 \cdot (-1) \cdot (3) \cdot (3) \\ & = \textcircled{-36} \end{aligned}$$