

Practice Exercises

Evaluate the following rational expressions.

1. $40y - 1, \quad y = 5$

2. $(p^2 - 3)^{-2}, \quad p = 1$

3. $\frac{(x - 1)^{-2}}{(x + 1)^{-2}}, \quad x = 2$

4. $y^{-3} - y^{-2}, \quad y = 2$

5. $a^{-1}b^0, \quad a = 2, b = 3$

Problem Set

Evaluate the following rational expressions.

1. $\frac{1}{a^{-2}}(a+4), \quad a = -8$

2. $(p^3 - 5)^{-2}, \quad p = 2$

3. $\frac{(x-2)^{-3}}{(x+1)^{-3}}, \quad x = 4$

4. $y^{-4} - y^{-3}, \quad y = 3$

5. $\frac{(m-n)^0}{(m+n)^{-1}}, \quad m = 2, n = 3$

Problem Set

$$\begin{aligned} 1. \quad & \frac{1}{(-8)^{-2}}(-8 + 4) \\ &= \frac{1}{1}(-4) \\ &= \frac{1}{(-8)^2} \\ &= \frac{1}{1}(-4) \\ &= \frac{64}{(64)(-4)} \\ &= -256 \end{aligned}$$

$$2. \quad (2^3 - 5)^{-2}$$

$$\begin{aligned} &= \frac{1}{(2^3 - 5)^2} = \frac{1}{(8 - 5)^2} \\ &= \frac{1}{3^2} = \frac{1}{9} \end{aligned}$$

$$\begin{aligned} 3. \quad & \frac{(4 - 2)^{-3}}{(4 + 1)^{-3}} \\ &= \frac{2^{-3}}{5^{-3}} = \frac{\frac{1}{2^3}}{\frac{1}{5^3}} \end{aligned}$$

$$\begin{aligned}
 &= \frac{\frac{1}{8}}{1} = \left(\frac{1}{8}\right) (125) \\
 &= \frac{125}{8}
 \end{aligned}$$

$$\begin{aligned}
 4. \quad &3^{-4} - 3^{-3} \\
 &= \frac{1}{3^4} - \frac{1}{3^3} = \frac{1}{81} - \frac{1}{27} \\
 &= -\frac{2}{81}
 \end{aligned}$$

$$\begin{aligned}
 5. \quad &\frac{(2-3)^0}{(2+3)^{-1}} \\
 &= \frac{1}{5^{-1}} \\
 &= \frac{1}{\frac{1}{5}} \\
 &= (1)(5) \\
 &= 5
 \end{aligned}$$