Exercise 20

Radicals and Exponents Evaluate each expression.

$$\textbf{(a)} \quad -2^3 \cdot (-2)^0 \qquad\qquad \textbf{(b)} \quad -2^{-3} \cdot (-2)^0 \qquad\qquad \textbf{(c)} \quad \left(\frac{-3}{5}\right)^{-3}$$

Solution

Evaluate these expressions, noting that any number raised to the power of 0 is 1. Also, a negative exponent switches the numerator and the denominator.

Part (a)

$$-2^3 \cdot (-2)^0 = -2^3 \cdot (1)$$
$$= -2^3$$
$$= -8$$

Part (b)

$$-2^{-3} \cdot (-2)^0 = -2^{-3} \cdot (1)$$
$$= -2^{-3}$$
$$= -\frac{1}{2^3}$$
$$= -\frac{1}{8}$$

Part (c)

Multiplying three negative signs together makes the result negative.

$$\left(\frac{-3}{5}\right)^{-3} = \left(\frac{5}{-3}\right)^3$$
$$= \left(\frac{5}{-3}\right)\left(\frac{5}{-3}\right)\left(\frac{5}{-3}\right)$$
$$= -\frac{5^3}{3^3}$$
$$= -\frac{125}{27}$$