

Exercise 143

In the following exercises, simplify.

$$-\frac{108}{63}$$

Solution

Write out the prime factorizations of 108 and 63.

$$\begin{aligned}108 &= 2 \times 54 \\ &= 2 \times 2 \times 27 \\ &= 2 \times 2 \times 3 \times 9 \\ &= 2 \times 2 \times 3 \times 3 \times 3\end{aligned}$$

$$\begin{aligned}63 &= 9 \times 7 \\ &= 3 \times 3 \times 7\end{aligned}$$

Therefore,

$$-\frac{108}{63} = -\frac{2 \times 2 \times 3 \times \cancel{3} \times \cancel{3}}{\cancel{3} \times \cancel{3} \times 7} = -\frac{2 \times 2 \times 3}{7} = -\frac{12}{7}.$$