

# HW 3.9

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**Find the product.**

$$\begin{aligned} 2. \quad \frac{\cancel{24}}{7x^2} \cdot \frac{14x^6}{\cancel{40}} &= \frac{3}{\cancel{7}x^2} \cdot \frac{\cancel{14}x^6}{5} = \frac{3}{x^2} \cdot \frac{2x^6}{5} = \frac{6x^6}{5x^2} \\ &= \frac{6x^4}{5} \end{aligned}$$



**Find the product.**

$$\begin{aligned} 4. \quad \frac{5x + 10}{2x - 6} \cdot \frac{x - 3}{10x + 20} &= \frac{(5x + 10)(x - 3)}{(2x - 6)(10x + 20)} \\ &= \frac{5(x + 2)(x - 3)}{2(x - 3)10(x + 2)} \\ &= \frac{\cancel{5}(x + 2)(x - 3)}{2(x - 3)2 \cdot \cancel{5}(x + 2)} \\ &= \frac{1}{4} \end{aligned}$$



**Find the product.**

$$\begin{aligned} \mathbf{6.} \quad \frac{x^2 + 4x - 12}{x^2 + 7x + 10} \cdot \frac{x + 5}{2x - 4} &= \frac{(x + 6)(x - 2)(x + 5)}{(x + 2)(x + 5)2(x - 2)} \\ &= \frac{(x + 6)\cancel{(x - 2)}\cancel{(x + 5)}}{(x + 2)\cancel{(x + 5)}2\cancel{(x - 2)}} \\ &= \frac{(x + 6)}{2(x + 2)} \end{aligned}$$



Find the product.

$$8. \quad \frac{x^4}{x^4 + 5x^3} \cdot (x + 5) = \frac{x \bullet x \bullet x \bullet x \bullet (x + 5)}{x^3(x + 5)}$$

$$= \frac{\cancel{x} \bullet \cancel{x} \bullet \cancel{x} \bullet x \bullet \cancel{(x + 5)}}{\cancel{x} \bullet \cancel{x} \bullet \cancel{x} \bullet \cancel{(x + 5)}}$$

$$= x$$



**Find the quotient.**

$$\begin{aligned} 10. \quad & \frac{24}{5x^3} \div \frac{6}{25x^2} \\ &= \frac{24}{5x^3} \cdot \frac{25x^2}{6} \\ &= \frac{\cancel{2} \cdot \cancel{2} \cdot \cancel{2} \cdot \cancel{3} \cdot \cancel{5} \cdot \cancel{5} \cdot \cancel{x} \cdot \cancel{x}}{\cancel{5} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{2} \cdot \cancel{3}} \\ &= \frac{2 \cdot 2 \cdot 5}{x} \\ &= \frac{20}{x} \end{aligned}$$

$$\begin{aligned} 12. \quad & \frac{7x + 21}{30} \div \frac{21x + 63}{20} \\ &= \frac{7x + 21}{30} \cdot \frac{20}{21x + 63} \\ &= \frac{7(x+3)}{2 \cdot 3 \cdot 5} \cdot \frac{2 \cdot 2 \cdot 5}{21(x+3)} \\ &= \frac{\cancel{7}(x+3) \cdot \cancel{2} \cdot \cancel{2} \cdot \cancel{5}}{\cancel{2} \cdot \cancel{3} \cdot \cancel{5} \cdot 3 \cdot \cancel{7}(x+3)} \\ &= \frac{2}{3 \cdot 3} = \frac{2}{9} \end{aligned}$$



**Find the quotient.**

$$\begin{aligned} 14. \quad \frac{x+2}{3x-3} \div \frac{x^2+11x+18}{x-1} &= \frac{x+2}{3x-3} \bullet \frac{x-1}{x^2+11x+18} \\ &= \frac{x+2}{3(x-1)} \bullet \frac{x-1}{(x+2)(x+9)} \\ &= \frac{\cancel{(x+2)}\cancel{(x-1)}}{3\cancel{(x-1)}\cancel{(x+2)}(x+9)} \\ &= \frac{1}{3(x+9)} \end{aligned}$$



**Find the quotient.**

$$\begin{aligned} \mathbf{16.} \quad \frac{2x + 10}{x^2 - 25} \div \frac{4x^2}{2x^2 - 10x} &= \frac{2x + 10}{x^2 - 25} \cdot \frac{2x^2 - 10x}{4x^2} \\ &= \frac{2(x + 5)}{(x - 5)(x + 5)} \cdot \frac{2x(x - 5)}{2 \cdot 2 \cdot x \cdot x} \\ &= \frac{\cancel{2}(x + 5) \cdot \cancel{2} \cdot \cancel{x} \cdot \cancel{(x - 5)}}{\cancel{(x - 5)} \cdot \cancel{(x + 5)} \cdot \cancel{2} \cdot \cancel{2} \cdot \cancel{x} \cdot x} \\ &= \frac{1}{x} \end{aligned}$$

