

Ch. 11 Mid-Chapter Quiz
pg. 690 # 1-22 all

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$$\textcircled{1} \frac{6x^2-24}{x+2} = \frac{6(x^2-4)}{(x+2)} = \frac{6(\cancel{x+2})(x-2)}{(x+2)} = \frac{6(x-2)}{\underline{x+2}}$$

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$$\textcircled{2} \frac{3c+9}{3c-9} = \frac{3(c+3)}{3(c-3)} = \frac{\underline{c+3}}{\underline{c-3}}, \underline{c \neq 3}$$

$$\textcircled{3} \frac{k-2}{k^2+2k-8} = \frac{(k-2)}{(k+4)(\cancel{k-2})} = \frac{1}{\underline{k+4}}, \underline{k \neq 2 \text{ or } -4}$$

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$$\textcircled{4} \frac{2x^2+13x+15}{2x+10} = \frac{(2x+3)(\cancel{x+5})}{2(\cancel{x+5})} = \frac{\underline{2x+3}}{\underline{2}}, \underline{x \neq -5}$$

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$$\begin{aligned} &2x^2+13x+15 \\ &2x^2+10x+3x+15 \\ &2x(x+5)+3(x+5) \\ &\underline{(2x+3)(x+5)} \end{aligned}$$

$$\textcircled{5} \frac{9-x^2}{x^2+x-12} = \frac{(3-x)(3+x)}{(x+4)(x-3)} = \frac{-1(-3+x)(3+x)}{(x+4)(\cancel{x-3})} = \frac{-1(3+x)}{\underline{(x+4)}}$$

$x \neq 3$
or -4

$$V = lwh$$

$$\textcircled{6} \quad \begin{aligned} 2w^3 + 7w^2 + 6w &= l w (3 + 2w) \\ 2w^3 + 7w^2 + 6w &= l (3w + 2w^2) \\ \frac{2w^3 + 7w^2 + 6w}{3w + 2w^2} &= \frac{l (3w + 2w^2)}{3w + 2w^2} \end{aligned}$$

$$\frac{2w^3 + 7w^2 + 6w}{3w + 2w^2} = \frac{w(2w^2 + 7w + 6)}{w(3 + 2w)} = \frac{\cancel{w}(2w+3)(w+2)}{\cancel{w}(3+2w)}$$

$$\begin{aligned} &2w^2 + 7w + 6 \\ &2w^2 + 4w + 3w + 6 \\ &2w(w+2) + 3(w+2) \\ &(2w+3)(w+2) \end{aligned}$$

$$\frac{w+2 = l}{1}$$

$$\textcircled{7} \quad \frac{4}{y^3} \cdot \frac{-3}{5y} = \frac{-12}{5y^4}$$

$$\textcircled{8} \quad \frac{z-3}{3z} \cdot \frac{z+8}{z+2} = \frac{(z-3)(z+8)}{3z(z+2)}$$

$$\textcircled{9} \quad \frac{x^2-4}{x+3} \cdot \frac{x^2+7x+12}{x-2} = \frac{(x+2)(x-2)}{\cancel{(x+3)}} \cdot \frac{(x+4)(x+3)}{\cancel{(x-2)}}$$

$$= \frac{(x+2)(x+4)}{1}$$

$$\frac{z+5}{z} \cdot \frac{4z}{3(z+5)} = \frac{4}{3}$$

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$$\textcircled{11} \frac{2a-1}{a-3} \div \frac{a^2-a-6}{1} = \frac{2a-1}{a-3} \cdot \frac{1}{(a-3)(a+2)}$$

$$= \frac{(2a-1)}{(a-3)(a-3)(a+2)}$$

$$\textcircled{12} \frac{4d^2-3d}{7d} \div \frac{4d^2+d-3}{1} = \frac{d(4d-3)}{7d} \cdot \frac{1}{(4d-3)(d+1)}$$

$$\frac{4d^2+d-3}{4d^2+4d-3d-3} = \frac{1}{7(d+1)}$$

$$\frac{4d(d+1)-3(d+1)}{(4d-3)(d+1)}$$

$$\textcircled{13} (6x^3 - 4x^2 + 2x) \div 4x^2 = \frac{3 \cancel{6}x^3}{2 \cancel{4}x^2} - \frac{\cancel{4}x^2}{1 \cancel{4}x^2} + \frac{\cancel{2}x}{2 \cancel{4}x^2}$$

$$= \frac{3x}{2} - 1 + \frac{1}{2x}$$

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$$(14) \frac{\frac{1}{x+5}}{\frac{3x}{x^2-25}} = \frac{1}{x+5} \div \frac{3x}{x^2-25} = \frac{1}{x+5} \cdot \frac{x^2-25}{3x}$$

$$\frac{1}{x+5} \cdot \frac{\cancel{(x+5)}(x-5)}{3x} = \frac{x-5}{3x}$$

$$(15) A = lw$$

$$\frac{12x^3 + 23x^2 + 13x + 2}{4x+1} = \frac{(4x+1)w}{4x+1}$$

$$\begin{array}{r} 3x^2 + 5x + 2 \\ 4x+1 \overline{) 12x^3 + 23x^2 + 13x + 2} \\ \underline{- 12x^3 + 3x^2} \downarrow \\ 20x^2 + 13x \\ \underline{- 20x^2 + 5x} \downarrow \\ 8x + 2 \\ \underline{8x + 2} \\ 0 \end{array}$$

$$(16) \frac{3}{8x} + \frac{5}{8x} = \frac{8}{8x} = \frac{1}{x}$$

$$(17) \frac{5y}{y+3} - \frac{7y}{y+3} = \frac{-2y}{y+3}$$

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$$\textcircled{18} \quad \frac{3}{5x^2} + \frac{5}{2x} = \frac{(2)3}{(2)5x^2} + \frac{5(5x)}{2x(5x)} = \frac{6}{10x^2} + \frac{25x}{10x^2}$$

$$= \frac{25x+6}{10x^2}$$

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$$\textcircled{19} \quad \frac{4}{t-3} - \frac{1}{t-2} = \frac{4(t-2)}{(t-3)(t-2)} - \frac{1(t-3)}{(t-3)(t-2)}$$

$$= \frac{(4t-8) - (t-3)}{(t-3)(t-2)}$$

$$= \frac{3t-5}{(t-3)(t-2)}$$

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$$\textcircled{20} \quad \frac{2x}{x-5} + \frac{9}{x+4} = \frac{2x(x+4)}{(x-5)(x+4)} + \frac{9(x-5)}{(x+4)(x-5)}$$

$$= \frac{(2x^2+8x) + (9x-45)}{(x-5)(x+4)}$$

$$= \frac{2x^2+17x-45}{(x-5)(x+4)}$$

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$$\textcircled{21} \frac{p}{x^2+x-12} = \frac{(x+5)(x+4)}{(x-3)(x+4)} = \frac{(x+5)}{(x-3)}$$

$$(x+5)(x+4) = \underline{x^2 + 9x + 20}$$

$$\textcircled{22} \frac{x-3}{x+4} \cdot \frac{x}{3-x}$$

A) It is not correct to say $x-3$ and $3-x$ common factors. Their quotient is not 1, it is -1 .

$$B) \frac{\cancel{x-3}}{x+4} \cdot \frac{x}{-(-\cancel{3+x})}$$

$$\frac{x}{-1(x+4)} = \frac{x}{-x-4}$$