

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

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

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

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

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

$$2x^2 + 13x + 15$$

$$2x^2 + 10x + 3x + 15$$

$$2x(x + 5) + 3(x + 5)$$

$$(2x + 3)(x + 5)$$

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

$$x \neq 3 \text{ or } -4$$

$$V = lwh$$

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

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

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

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

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

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

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

$$= \frac{x+4}{1}$$

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

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

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

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

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

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

$$\frac{6x^3-4x^2+2x}{4x^2} = \frac{3}{2} \frac{6x^3}{4x^2} - \frac{4x^2}{4x^2} + \frac{2x}{2x^2}$$

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

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

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

$$(15) A = l w$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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