

$$\boxed{\text{LCD} = 12}$$

Feb. 4 bell ringer

Solve.

$$\cancel{12}^4 \frac{2x}{3} - \frac{1 \cdot \cancel{12}^6}{2} = \frac{3 \cdot \cancel{12}^3}{4} x + 2 \cdot 12$$

$$\begin{array}{r} 8x \\ \underline{-9x} \end{array} - \frac{\cancel{6}}{\underline{+6}} = \frac{\cancel{9x}}{\underline{-9x}} + \frac{24}{\underline{+24}}$$

$$-x = 30$$

$$\boxed{x = -30}$$

$$\boxed{\text{LCD } x(x+1)}$$

Learning target:

You can solve equations containing rational expressions.

$$\textcircled{1} \quad \frac{5}{x+1} - \frac{1}{x} = \frac{2}{x^2+x}$$

$$\frac{5 \cdot \cancel{x(x+1)}}{\cancel{x+1}} - \frac{1 \cdot \cancel{x(x+1)}}{\cancel{x}} = \frac{2 \cdot \cancel{x(x+1)}}{\cancel{x(x+1)}}$$

$$5x - 1(x+1) = 2$$

$$5x - x - 1 = 2$$

$$4x - 1 = 2$$

$$4x = 3$$

$$x = \frac{3}{4}$$

$$2 \frac{2n}{\cancel{n-5}} + \frac{4n-30}{\cancel{n-5}} = \frac{LCD n-5}{5(n-5)}$$

$$2n + 4n - 30 = 5n - 25$$

$$\begin{array}{r} 6n - 30 = 5n - 25 \\ -5n \quad +30 \quad -5n \quad +30 \end{array}$$

NO
Solution

$$n = 5$$

extraneous
solution

$$\boxed{\text{LCD } (t+1)(t-1)}$$

③

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

$$2t(t-1) + 4(t+1) = 2(t^2 - 1)$$

$$2t^2 - 2t + 4t + 4 = 2t^2 - 2$$

$$\begin{array}{r} 2t^2 + 2t + 4 = 2t^2 - 2 \\ \underline{-2t^2} \qquad \qquad \underline{-2t^2} \\ 2t + 4 = -2 \end{array}$$

$$\begin{array}{r} 2t + 4 = -2 \\ \underline{-4} \qquad \underline{-4} \end{array}$$

$$2t = -6$$

$$\boxed{t = -3}$$

LCD $x-1$

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

$$x^2 - x - 3 + x^3 + 2x^2 = 3x - 3$$

$$x^3 + 3x^2 - x - 3 = 3x - 3$$

$$\underline{-3x} + 3 \quad \underline{-3x} + 3$$

$$x^3 + 3x^2 - 4x = 0$$

$$x(x^2 + 3x - 4) = 0$$

$$x(x+4)(x-1) = 0$$

$$x=0 \quad \text{or} \quad x=-4 \quad \text{or} \quad x=1$$

$x = 0$ or $x = 1$ or $x = 1$
extraneous solution

5) LCD (m-9)(m+5)

$$\frac{m+3}{m+5} + \frac{2}{m-9} = \frac{-20}{m^2-4m-45}$$

$$\frac{(m+3)\cancel{(m-9)}\cancel{(m+5)}}{\cancel{m+5}} + \frac{2\cancel{(m-9)}\cancel{(m+5)}}{\cancel{m-9}} = \frac{-20\cancel{(m-9)}\cancel{(m+5)}}{\cancel{(m-9)}\cancel{(m+5)}}$$

$$(m+3)(m-9) + 2(m+5) = -20$$

$$m^2 - 6m - 27 + 2m + 10 = -20$$

$$m^2 - 4m - 17 = -20$$

$$\underline{+20} \quad \underline{+20}$$

$$m^2 - 4m + 3 = 0$$

$$(m-3)(m-1) = 0$$

$$m = 3 \text{ or } 1$$

$$\text{LCD } (3h-4)(h+2)$$

6)

$$\frac{h^2-7h-8}{3h^2+2h-8} + \frac{1}{h+2} = 0$$

$$\frac{(h^2-7h-8)\cancel{(3h-4)(h+2)}}{\cancel{(3h-4)(h+2)}} + \frac{1\cancel{(3h-4)(h+2)}}{\cancel{(3h-4)(h+2)}} = 0$$

$$h^2-7h-8+3h-4=0$$

$$h^2-4h-12=0$$

$$(h-6)(h+2)=0$$

$$h = 6 \quad \text{or} \quad h = -2$$

extraneous
solution

Assignment

pp. 730-731

2-6E, 10-20E, 32, 34

$$12) \quad \frac{\cancel{15} \cancel{b}^2}{(b+c)(b-c)} \cdot \frac{(b+5)(b-5)}{\cancel{5} \cancel{b}}$$

$$\frac{3b(b+5)(b-5)}{(b+c)(b-c)}$$

28) LCD $5(y+3)(y-3)$

$$\frac{6}{5(y^2-9)}$$

$$- \frac{8}{3-y}$$

$$\frac{6}{5(y+3)(y-3)}$$

$$+ \frac{8 \cdot 40(y+3)}{5(y+3)(y-3)}$$

$$\frac{6}{5(y+3)(y-3)} + \frac{40y+120}{5(y+3)(y-3)}$$

$$5(y+3)(y-3) \quad 5(y+3)(y-3)$$

$$\frac{40y + 126}{5(y+3)(y-3)}$$

$$\text{or } \frac{2(20y + 63)}{5(y+3)(y-3)}$$

23)

$$\frac{2x+3t}{4x-2t}$$

$$- \frac{(t-2x)}{4x-2t}$$

$$\frac{2x+3t-t+2x}{4x-2t}$$

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

$$\frac{2x+t}{2x-t}$$

32)

$$\left(x - \frac{6}{x+2} \right) \div \left(x + \frac{8}{x+5} \right)$$

$$\left(\frac{x^2 + 2x - 6}{x+2} \right) \div \left(\frac{x^2 + 5x + 8}{x+5} \right)$$

$$\frac{x^2 + 2x - 6}{x+2} \quad \circ \quad \frac{\sqrt{} + \sqrt{}}{x^2 + 5x + 8}$$

$$\left(\frac{(x+5)(x^2 + 2x - 6)}{(x+2)(x^2 + 5x + 8)} \right)$$

$$(x+2)(x+1)(x-5)$$

$$x^3 + 7x^2 + 4x - 30$$

$$x^3 + 7x^2 + 18x + 14$$

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$$\left(\frac{3^b}{a} + \frac{4^a}{b} \right)$$

$$\therefore \left(\frac{4}{a} - \frac{3}{b} \right)$$

$$\left(\frac{3b + 4a}{ab} \right)$$

$$\therefore \left(\frac{4b - 3a}{ab} \right)$$

$$\frac{3b+4a}{ab} \cdot \frac{\cancel{ab}}{4b-3a}$$

$$\frac{3b+4a}{4b-3a}$$