Without actually solving the equation, list all possible numbers that would have to be rejected if they appeared as potential solutions.

$$\frac{3}{6x+13} - \frac{1}{x} = \frac{1}{13x-9}$$

$x \neq 0, \frac{9}{13}, \frac{-13}{6}$

How do you make these denominators look the same?

1. $\frac{11}{x+6} \quad \frac{-1}{-1} \cdot \frac{5}{-x-6}$

$\frac{11}{x+6} \quad \frac{-5}{x+6}$

2. $\frac{-1}{-1} \cdot \frac{13}{9-x} \quad \frac{4}{x-9}$

$\frac{-13}{x-9} \quad \frac{4}{x-9}$

Solve. $\frac{2}{x^2+11x+30} - \frac{7}{x^2-x-30} = \frac{8}{3x^2-108} \Rightarrow 3(x^2-36)$

$\frac{3(x-6)}{3(x-6)} \cdot \frac{2}{(x+6)(x+5)} - \frac{7}{(x-6)(x+5)} \cdot \frac{3(x+6)}{3(x+6)} = \frac{8}{3(x+6)(x-6)} \cdot \frac{(x+5)}{(x+5)}$

$6(x-6) - 21(x+6) = 8(x+5)$

$6x-36-21x-126 = 8x+40$

$-15x-162 = 8x+40$

$-202 = 23x$

$x = \frac{-202}{23}$

Problems similar to "book" problems

Solve. $\frac{2x+8}{x^2-16} + \frac{-1\cdot(7)}{-1\cdot(-x-4)} = \frac{5}{x-4}$

$\frac{2x+8}{x^2-16} + \frac{-7}{x+4} = \frac{5}{x-4}$

$\frac{2x+8}{(x+4)(x-4)} + \frac{-7}{(x+4)(x-4)} \cdot \frac{(x-4)}{(x-4)} = \frac{5}{x-4} \cdot \frac{(x+4)}{(x+4)}$

$2x+8-7x+28 = 5x+20$

$-5x+36 = 5x+20$

$16 = 10x$

$x = \frac{16}{10} = \frac{8}{5} = 1.6$

Solve. $\frac{-1}{-1} \cdot \frac{3}{5-x} - \frac{4x}{x^2-25} = \frac{8}{x+5}$

$$\frac{-3}{x-5} - \frac{4x}{x^2-25} = \frac{8}{x+5}$$

$$\frac{(x+5)}{(x+5)} \cdot \frac{-3}{x-5} - \frac{4x}{(x+5)(x-5)} = \frac{8}{x+5} \cdot \frac{(x-5)}{(x-5)}$$

$$-3(x+5) - 4x = 8(x-5)$$

$$-3x-15-4x = 8x-40$$

$$-7x-15 = 8x-40$$

$$25 = 15x$$

$$x = \frac{25}{15} = \frac{5}{3}$$

You and I work at the same rate. If it takes each of us 3 hours to finish raking a lawn when working alone, how long would it take if we worked together?

$1\frac{1}{2}$ hrs

(half the amount of time it would take one person, but only because they work at the same rate)

Sally can rake the lawn in 3 hours. Karl can rake the lawn in 2 hours. How long would it take them to rake the lawn if they worked together?

$$\text{Sally's Rate} = \frac{1 \text{ lawn}}{3 \text{ hrs}} = \frac{1}{3} \frac{\text{lawn}}{\text{hr}}$$

$$\text{Karl's Rate} = \frac{1 \text{ lawn}}{2 \text{ hrs}} = \frac{1}{2} \frac{\text{lawn}}{\text{hr}}$$

$t$ = # hrs they work together

Together

$$\frac{1}{3}\frac{\text{lawn}}{\text{hr}} \cdot t \text{ hrs} + \frac{1}{2}\frac{\text{lawn}}{\text{hr}} \cdot t \text{ hrs} = 1 \text{ lawn}$$

$$\frac{1}{3}t + \frac{1}{2}t = 1$$

$$\frac{2}{2}\frac{t}{3} + \frac{3}{3}\frac{t}{2} = 1 \cdot \frac{6}{6}$$

$$\frac{2t}{6} + \frac{3t}{6} = \frac{6}{6}$$

$$\frac{5t}{6} = \frac{6}{6}$$

$$5t = 6$$

$$t = \frac{6}{5} = 1.2 \text{ hrs}$$

One pump can fill a tank is 1 hour and 40 minutes (100 min). Another pump can fill the same tank in 1 hour and 20 minutes. How long would it take them to fill the tank together? 80 min

$$1\text{ST pump} = \frac{1}{100}\frac{\text{tank}}{\text{min}}$$

$$2\text{nd pump} = \frac{1}{80}\frac{\text{tank}}{\text{min}}$$

$t$ = # min pumps work together

$$\frac{1}{100} \cdot t + \frac{1}{80}t = 1$$

$$400\left(\frac{t}{100} + \frac{t}{80} = 1\right)400$$

$$4t + 5t = 400$$

$$9t = 400$$

$$t = \frac{400}{9}$$

$$t = 44.44 \text{ min}$$

You can now finish Hwk #44

Sec 9-6

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Problems 5, 25, 41, 46, 49 - 51