

9.3 Rational Equations

pg. 457-458 One partner do Investigation A while the other partner does B. Then teach each other.

Investigation A

$$C(t) = \frac{40t}{1.1t^2 + 0.3}$$

$$t \geq 0$$

$$y_1 = 40t / (1.1t^2 + 0.3)$$

$$y_2 = 10$$

$$t = 3.56 \text{ hrs}$$

$$\text{OR}$$

$$(1.1t^2 + 0.3) 10 = \frac{40t}{1.1t^2 + 0.3}$$

$$11t^2 + 3 = 40t$$

$$11t^2 - 40t + 3 = 0$$

$$\text{QF... } x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$t = 3.56 \text{ hrs}$$

Investigation B

$$\cancel{(x-3)} \frac{x+2}{\cancel{x-3}} = (x-6)(x-3)$$

$$x \neq 3$$

$$x+2 = x^2 - 9x + 18$$

$$0 = x^2 - 10x + 16$$

$$0 = (x-8)(x-2)$$

$$x=8 \quad x=2$$

$$y_1 = \frac{x+2}{x-3} \quad y_2 = x-6$$

ex) Solve $\frac{2x}{2x+5} + 2x = \frac{8x+15}{2(2x+5)}$ $x \neq -5/2$

$$2x + 8x^2 + 20x = 8x + 15$$

x: -120

t: 14

(20, -6)

$$8x^2 + 14x - 15 = 0$$

$$8x^2 + 20x - 6x - 15 = 0$$

$$4x(2x+5) - 3(2x+5) = 0$$

$$(2x+5)(4x-3) = 0$$

~~$x = -5/2$~~ $x = 3/4$

Verify by graphing...

$$\text{ex) } p = \frac{\text{success}}{\text{total}}$$

$$0.8 = \frac{12 + x}{19 + x}$$

$$0.8(19 + x) = 12 + x$$

$$\begin{array}{r} 15.2 + 0.8x = 12 + x \\ -12 \quad -0.8x \quad -12 \end{array}$$

$$\frac{3.2}{0.2} = \frac{0.2x}{0.2}$$

$$(16 = x)$$

$$y_1 = 0.8$$

$$y_2 = \frac{12 + x}{19 + x}$$

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#2-6, 8-13, C2