

March 2, 2015

3.4 #22

Velocity (v)

time (t) (Sec)

(x, y)

(time, Velocity)

$$m = \frac{320 - 200}{2 - 8} = \frac{120}{-6} = -20$$

(t, v)

① (2 sec, 320 fps) = (2, 320) = $-\frac{20}{1}$

② (8 sec, 200 fps) = (8, 200)

For every one second Velocity drops by 20 fps

Mar 2-9:54 AM

#22

$$y = mx + b$$

Velocity = $-\frac{20}{1} \cdot \text{time} + b$

$$320 = -\frac{20}{1} \cdot 2 + b$$

$$320 = -40 + b$$

$$360 = b$$

$$v = -20t + 360$$

or

$$v(t) = -20t + 360$$

$$0 = -20t + 360$$

$$\frac{-360}{-20} = \frac{-20t}{-20}$$

$$18 = t$$

18 seconds

Mar 2-10:09 AM

Check of Friday's problem

$(\frac{1}{2}, -\frac{1}{2})$ ✓

$$\begin{cases} 5x - 9y = 7 \\ -3x + 7y = -5 \end{cases}$$

$$5(\frac{1}{2}) - 9(-\frac{1}{2}) = 7$$

$$\frac{5}{2} + \frac{9}{2} = 7$$

$$\frac{14}{2} = 7 \checkmark$$

$$-3(\frac{1}{2}) + 7(-\frac{1}{2}) = -5$$

$$-\frac{3}{2} - \frac{7}{2} = -5$$

$$\frac{-3-7}{2} = -5$$

$$-\frac{10}{2} = -5 \checkmark$$

Mar 2-10:16 AM

Solving Systems

② Substitution $(16, -4)$

$$\begin{cases} x + 2y = 8 \\ x + 3y = 4 \end{cases}$$

Substitution

Steps

① Solve an equation for a variable

$$x = 4 - 3y$$

② Substitute the result from ① into the other equation.

$$4 - 3y + 2y = 8$$

$$4 - y = 8$$

$$-y = 4$$

$$y = -4$$

③ Substitute result from ② into the other equation

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

$$x - 12 = 4$$

$$x = 16$$

④ Check

Mar 2-10:20 AM

Use Substitution

$$\begin{cases} 5x + 3y = 4 \\ 2x - y = 5 \end{cases} \left(\frac{19}{11}, -\frac{17}{11}\right)$$

② $2x - y = 5$ solve for "y"

$$2x - 5 = y$$

① $5x + 3(2x - 5) = 4$

$$5x + 6x - 15 = 4$$

$$11x - 15 = 4$$

$$11x = 19$$

$$x = \frac{19}{11}$$

② $2(\frac{19}{11}) - y = 5$

$$\frac{38}{11} - y = 5$$

$$\frac{38}{11} - \frac{55}{11} = y$$

$$\frac{38-55}{11} = y$$

$$-\frac{17}{11} = y$$

Mar 2-10:32 AM

$(\frac{19}{11}, -\frac{17}{11})$

$$\begin{cases} 5x + 3y = 4 \\ 2x - y = 5 \end{cases}$$

$$5(\frac{19}{11}) + 3(-\frac{17}{11}) = 4$$

$$\frac{95}{11} - \frac{51}{11} = 4$$

$$\frac{95-51}{11} = 4$$

$$\frac{44}{11} = 4 \checkmark$$

$$2(\frac{19}{11}) - (-\frac{17}{11}) = 5$$

$$\frac{38}{11} + \frac{17}{11} = 5$$

$$\frac{38+17}{11} = 5$$

$$\frac{55}{11} = 5 \checkmark$$

Mar 2-10:44 AM