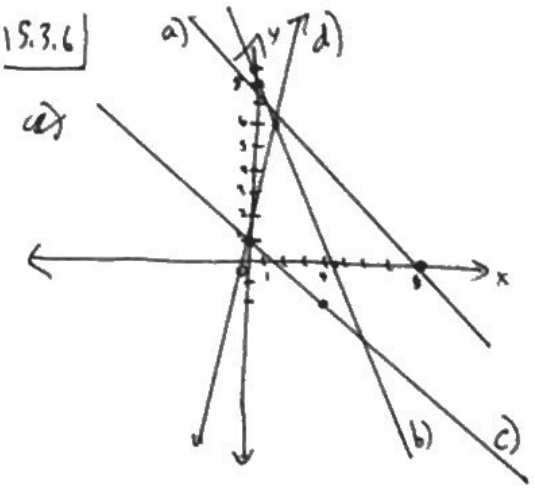
MA 202 HW 20 Solutions | 15.3: #6, 16, 26, 28, 29, 31, 32, 34, 36, 38, 40, 42

15.3.6



15.3.16

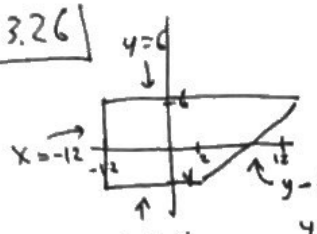
a) $y = x - 9$
$0 = x - 9$
$x = 9$
x-int: $(9, 0)$
$y = 0 - 9$
$y = -9$
y-int: $(0, -9)$

b) $y = -2(x-3)$
$0 = -2(x-3)$
$x = 3$
x-int: $(3, 0)$
$y = -2(0-3)$
$y = 6$
y-int: $(0, 6)$

c) $-y + 6x = 4$
$0 + 6x = 4$
$x = \frac{2}{3}$
x-int: $(\frac{2}{3}, 0)$
$-y + 0 = 4$
$y = -4$
y-int $(0, -4)$

d) $y = 1$
x-int: none
y-int: $(0, 1)$.

15.3.26

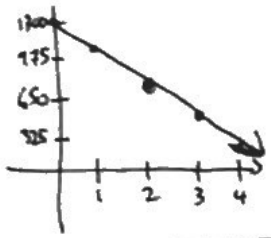


$y - 6 = \frac{6+4}{12-2}(x-12)$
$y = 6 + x - 12$
$y = x - 6$

15.3.28 y = value in $ after x years
x = # years
$y = 1300 - 250x$

a) The slope is -250, meaning the computer loses $250 of value every year.
The y-intercept is $(0, 1300)$, meaning that the computer's initial value is $1300.

b)



c) $y = 1300 - 250(3)$
$= 1300 - 750$
$= \$550$

15.3.29

The student swapped the x and y-intercepts.
Should review what it means to intersect two lines and that the x-axis is the line $y=0$ and the y-axis is the line $x=0$.

15.3.31 The line becomes steeper but still passes through $(0, 3)$.

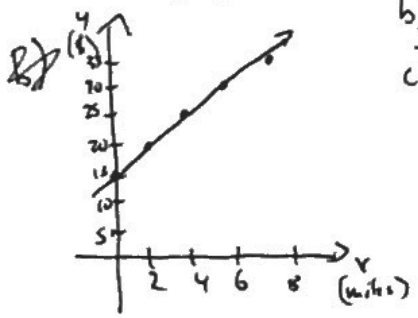
15.3.32 A point lies on the graph of $y = -2x + 11$ if and only if its coordinates are a solution to the equation.
Here we get $-2(3) + 11 = -6 + 11 = 5$,
so $(3, 5)$ is on the graph.

15.3.34

a) y = # dollars raised, x = # miles walked
$y = \frac{5}{2}x + 15$.

Slope is $\frac{25-15}{4-0} = \frac{10}{4} = \frac{5}{2}$.

b)



b) \$30

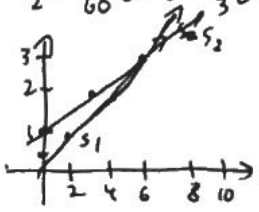
c) $y = \frac{5}{2}(6) + 15$
$= 15 + 15$
$= \$30$

15.3.36 t = # min

a) $s_1 = \frac{30 \text{ mph}}{60 \text{ min/mi}} t = \frac{1}{2}t$

b) $s_2 = \frac{20}{60}t + 1 = \frac{1}{3}t + 1$

c)

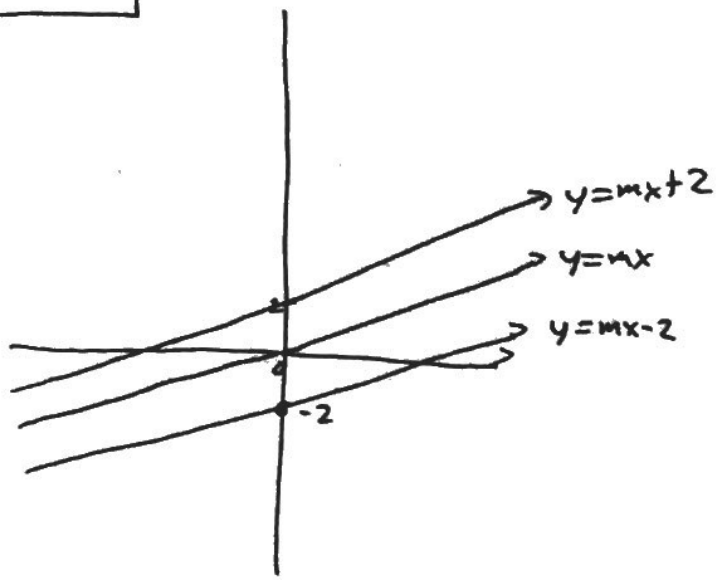


d) Set s_2 equal to s_1:
$\frac{1}{2}t = \frac{1}{3}t + 1$
$\frac{1}{6}t = 1$
$t = 6$ min

15.3.38 Translating to the right 7 units corresponds to replacing x by $x-7$ since if x was 0 before translation should have the same y value as $x=7$ after.

$y = 4(x-7) + 9 = 4x - 28 + 9 = 4x - 19$

15.3.40



15.3.42 Equation of line $\perp$ to $y=\frac{1}{2}x-4$ passing through $(8,3)$.

Slope will be $-\frac{1}{\frac{1}{2}}=-2$, so

$$\boxed{y-3=-2(x-8)}$$