MATH 111 – EXAM 1 – SOLUTIONS

1. (a) $3x+4y=5$ slope $= \frac{-3}{4}$ //

$4y = -3x+5$ y-intercept $= (0, \frac{5}{4})$ //

$y = \frac{-3}{4}x + \frac{5}{4}$ Another point:

$x=1,\ y=\frac{1}{2}$ $(1, \frac{1}{2})$ //

or $y=0$ $0 = \frac{-3}{4}x + \frac{5}{4}$

$\frac{3}{4}x = \frac{5}{4}$ $(\frac{5}{3}, 0)$

$x = 5/3$ //

there are many correct answers.

(b) $\frac{y-7}{x-1} = \frac{2}{3} \rightarrow 3y-21 = 2x-2$

$3y-2x = 19$ //

or $3y = 2x+19 \rightarrow y = \frac{2}{3}x + \frac{19}{3}$ //

(c) $m = \frac{3-(-1)}{1-2} = \frac{4}{-1} = -4$

$\frac{y-3}{x-1} = -4 \rightarrow y-3 = -4x+4$

$y = -4x+7$ //

2. slope: The company charges $35 per hour for the move.

y-intercept: The company charges a flat fee of $20 before any moving is done. Could also say $20 is the minimum charge for a job.

3. $.005q + .5 = -.01q + 5$

$.015q = 4.5$

$q = 300$ units //

$p = (-.01)(300) + 5 = \$2$ //.

4. $2x - 2y = -3 \rightarrow -2y = -2x - 3$

$y = x + \frac{3}{2}$

$5x - 4y = 1 \rightarrow -4y = -5x + 1$

$y = \frac{5}{4}x - \frac{1}{4}$

$x + \frac{3}{2} = \frac{5}{4}x - \frac{1}{4}$

$\frac{3}{2} + \frac{1}{4} = \frac{5}{4}x - x$

$\frac{7}{4} = \frac{1}{4}x$

$x = 7$ $\quad y = 1 + \frac{3}{2} = \frac{17}{2}$

Intersection point: $(7, 17/2)$ //

5. (a) x = # paperbacks sold
y = # hardbacks sold.

$x + y = 90$ (total of 90 books sold)

$5x + 20y = 675$ (total revenue of \$675).

(b) $-5[x + y = 90]$

$5x + 20y = 675$

$-5x - 5y = -450$

$5x + 20y = 675$

$15y = 225$

$y = 15$ $\quad x = 90 - 15 = 75$

$x = 75$
$y = 15$