MAT 099 2.4 – 2.7, 3.1, 3.2

February 14, 2012 Name KEY

1. **Recall:** The compound interest formula is $A = P\left(1+\frac{r}{n}\right)^{nt}$ t=9 yrs

If a principal amount of ~~$36,000~~ $400 is invested in an account paying an annual percentage rate of ~~4%~~ 7%, find the amount in the account after ~~7~~ 9 years, if the account is compounded ~~monthly~~ daily.

$A = 400\left(1+\frac{.07}{365}\right)^{365\cdot 9} \approx$ $751.00

See original for the actual numbers used. :)

Solve the following absolute value equations and inequalities. Write solution sets in set-builder notation *and*, for the inequalities, use interval notation, as well.

2. $|-3x+2|=3$

$-3x+2=3$ or $-3x+2=-3$

$-3x=1$ or $-3x=-5$

$\{x \mid x=-\frac{1}{3} \text{ OR } x=\frac{5}{3}\}$ or, simply, $\{-\frac{1}{3}, \frac{5}{3}\}$

3. $|5x-3|>4$

$5x-3>4$ OR $5x-3<-4$

$5x>7$ OR $5x<-1$

$\{x \mid x>\frac{7}{5} \text{ OR } x<-\frac{1}{5}\}$

$= (-\frac{1}{5}, \infty) \cup (\frac{7}{5}, \infty)$

4. $|-3x+2|<4$

$-3x+2<4$ and $-3x+2>-4$

$-3x<2$ and $-3x>-6$

$x>-\frac{2}{3}$ and $x<\frac{6}{3}$

$\{x \mid x>-\frac{2}{3} \text{ and } x<2\}$

$= (-\frac{2}{3}, 2)$

5. $|3x+5|\geq 3$

$3x+5\geq 3$ OR $3x+5\leq -3$

$3x\geq -2$ OR $3x\leq -8$

$\{x \mid x\geq \frac{2}{3} \text{ OR } x\leq -\frac{8}{3}\}$

$= (-\infty, -\frac{8}{3}] \cup [\frac{2}{3}, \infty)$

6. $|13x-11.9|>-1$

$(-\infty, \infty)$

7. $|17x+11|<-3.721$

$\emptyset$

8. $|3x-1|=-6$

$\emptyset$

9. Bonus ~~$|9x+7| = |3x-1|$~~

$4x-6 = 3x+5$ OR $4x-6 = -(3x+5) = -3x-5$

$x = 11$ OR $7x = 1$

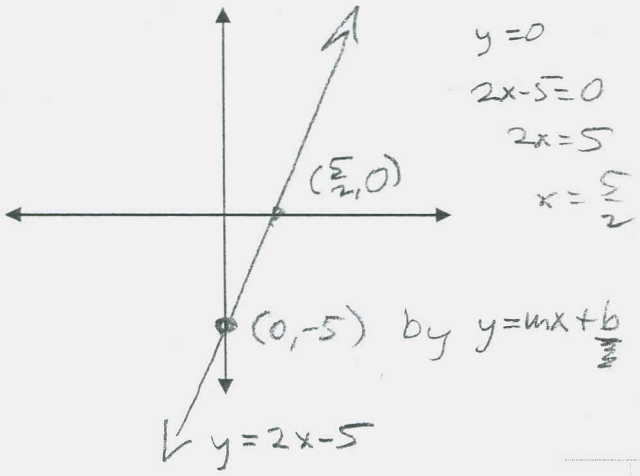
$x = \frac{1}{7}$

$\left\{\frac{1}{7}, 11\right\}$

10. Sketch the graph of each of the following equations. Include the intercepts, and if the intercepts are *all* you label on your graph, that's just fine with me!

a. $y = 2x - 5$ (In what form is this linear equation?)

Slope-Intercept



$y = 0$

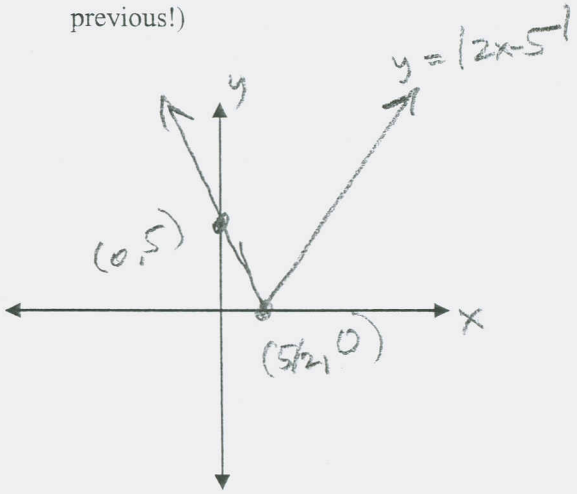
$2x - 5 = 0$

$2x = 5$

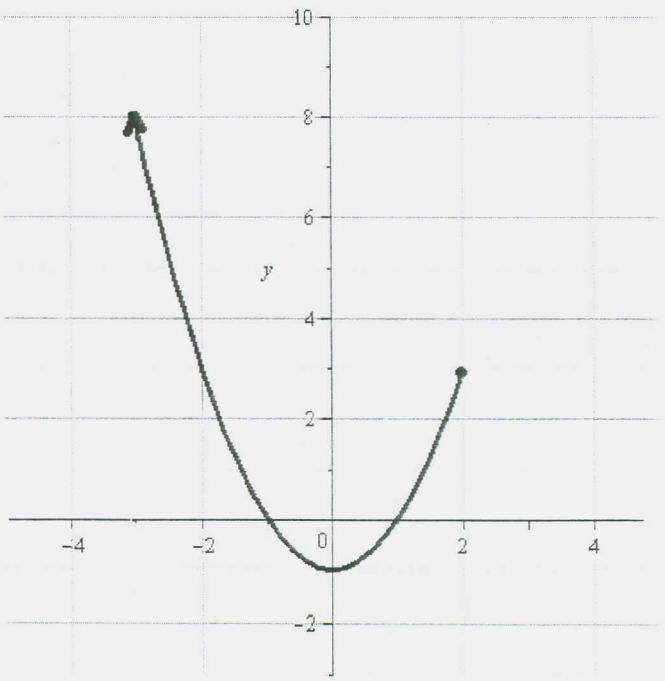
$x = \frac{5}{2}$

$(0, -5)$ by $y = mx + b$

b. $y = |2x - 5|$ (Reflect on the previous!)



11. Determine the domain and range of the relation from its graph. Use Interval notation in your answer.



$D = (-\infty, 2]$

$R = [-1, \infty)$