**Math 80 Test 2 Practice test 1 Fall 2015**

Fill in the blanks using the words term, factor, sum, product, difference, quotient, base, exponent, power, index, radicand or root.

1) (1 pt each) Given $f(x)=(4x+2)^2(x-3)$ $4x$ is both a Product and a term, $(4x+2)^2$ is both a Power and a factor, $x-3$ is a difference while $(x-3)$ is a factor and the entire expression is a product.

2) (3 pt) Solve $5|y-7|-4=11$ Expression your answer in set notation.

$5|y-7|-4=11$

$5|y-7|=15$

$|y-7|=3$

$y-7=3$

$y=10$

$y-7=-3$

$y=4$

Check

$5|3|-4$

$15-4$

$11$ ✓

$5|-3|-4$

$5(3)-4=11$ ✓

ANSWER.

$\{4,10\}$

3) (4 pts) Solve $|2k-1|\geq 7$. Express your solution as both a graph and in interval notation.

$|2k-1|\geq 7$

$2k-1\leq -7$ OR $2k-1\geq 7$

$2k\leq -6$ OR $2k\geq 8$

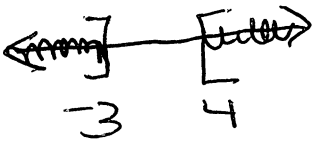
$k\leq -3$ OR $k\geq 4$

Check

$k=-5$ $|-11|\geq 7$ true

$k=100$ $|199|\geq 7$ true

$k=0$ $|-1|\geq 7$ false




$(-\infty,-3]\cup[4,\infty)$

4) (3 pts) Solve $-4<-2|t+14|$. Express your solution in interval notation.

$\frac{-4}{-2} > \frac{-2|t+14|}{-2}$

$2>|t+14|$

$|t+14|<2$

$-2<t+14<2$

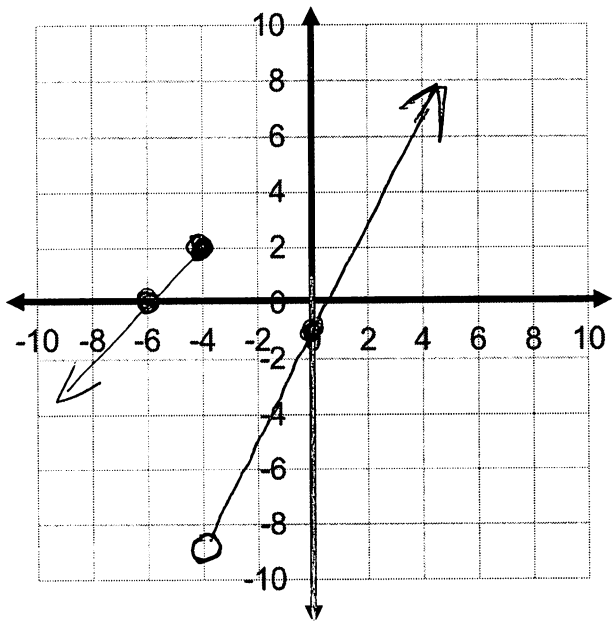
$-16<t-12$

$(-16,-12)$

5) Given $f(x)=\begin{cases} x+6 & \text{if } x \le -4 \\ 2x-1 & \text{if } x > -4 \end{cases}$

a. (1 pt) What's the domain of $f$? $(-\infty, \infty)$

b. (4 pts) Graph the function




g. (1 pt) Find $f(-1)$ $2(-1)-1=-3$ $f(-1)=-3$

h. (2 pts) Find $f(-4)-f(4)$ $f(-4)-f(4)=2-7=-5$

$f(-4)=2$

$f(4)=7$

6) What's the difference between a consistent dependent system and an inconsistent system?

a consistent dependent system has an infinite solution set while an inconsistent system has no solution

7) Solve the system **using substitution** $\begin{matrix} -9x - 4y = 35 \\ 5x + y = -17 \end{matrix}$ (4 points)

$5x+y=-17$

$y=-17-5x$

$-9x-4y=35$

$-9x-4(-17-5x)=35$

$-9x+68+20x=35$

$11x+68=35$

$11x=-33$

$\boxed{x=-3}$

$5x+y=-17$

$5(-3)+y=-17$

$\boxed{y=-2}$

Check

$-9(-3)-4(-2)$

$27+8$

$35$ ✓

$\boxed{\{(-3,-2)\}}$

8) Solve the system **using addition** $\begin{matrix} -9x - 4y = -6 \\ 5x - 6y = 28 \end{matrix}$. (4 points)

$-3(-9x-4y)=(-6)(-3)$

$2(5x-6y)=(28)2$

$27x+12y=18$

$10x-12y=56$

$37x=74$

$\boxed{x=2}$

$5x-6y=28$

$5(2)-6y=28$

$\boxed{y=3}$

Check

$-9(2)-4(-3)$

$-18+12$

$-6$ ✓

$\boxed{\{(2,-3)\}}$

9) After solving the system $\begin{matrix} x-4y=-1 \\ -3x+12y=6 \end{matrix}$ a student was left with $0=3$. Given this result, if you wrote both equations into the form $y=mx+b$ what would you expect in terms of the slope and the $y$-intercept? The value of m would be the same but the y-intercepts would be different. (It's an inconsistent system.)

10) Grandma has decided it's a good time to move part of her stock investment into bonds to reduce her risk. She's asked your help in redistributing her $850,000 between bonds which will earn 4.5% next year and stocks, which she predicts will earn 2% next year. If she needs her investments to bring in $24,000 in interest (pretax) for the year, how should her investments be redistributed? (Round your answers to the nearest dollar and **you must use a system of equations to answer the question**.)

Grandma should put $ 280,000 into bonds.
" " " $ 570,000 " stocks

total investment = Bond investment + stock invest.
850,000 = x + y

total interest = Bond interest + stock interest
24,000 = 0.045x + 0.02y

$x+y=850{,}000$
so
$y=850{,}000-x$

$0.045x+0.02y=24{,}000$
$0.045x+0.02(850{,}000-x)=24{,}000$
$0.045x+17000-0.02x=24{,}000$
$\frac{0.025x}{0.025}=\frac{7{,}000}{0.025}$ $\Rightarrow x=280{,}000$
$y=850{,}000-x$
$=570{,}000$