**Problem Set Name ANSWERS KEY**

**Due January 23rd**

**All Work must be shown for credit!!!**

**This will count as a GRADE. You are expected to do this on your own without a CALCULATOR. This should give you an idea of your preparedness for this course! (3 pts. each)**

1. Write the equation of $f\left(x\right)=2x ^{2}-8x+ 5$ right 7 units and up 3 units. y = $2(x-9)^{2}$

2. horiz comp by 1/4

2.­­­ left 2.5

2. reflected over x-axis

1. The equation $y=-[4x+10]$describes a function that is translated from a parent function.

a. Describe each of the translations with specific values: (i.e down 5 units)

 **Graph the following equations without using a calculator. (Transformations help!)**

3. y = 3| x + 1 | – 5 4. y = -2(x – 4)2 + 5 5. y =  + 1

  

1. 6. If , then what does *bc* equal? bc = $\frac{ab^{2}}{e-d}$ or $\frac{ec^{2}-dc^{2}}{a}$

 (Think, you can’t isolate bc)

7. If 12 – 6(x3 + y3) = 48, what is   36

8. Find the domain and range of the relation and determine whether it is a function.

 

**Use Interval Notation (Parentheses & Brackets)**

Domain:$\left(-\infty ,\infty \right)$

Range: $\left(-\infty ,-2\right)∪[-1,\infty )$

Function(yes or no) yes

 **Factor each of the following completely. DO NOT SOLVE!**

 9. x3 + 64 10. 25x2 + 30x + 9 11. x4 – 45x2 + 324 12. 24x3 – x2 – 3x

 (x + 4)(x2 – 4x + 16) (5x + 3)(5x + 3) (x – 6)(x + 6)(x – 3)(x + 3) (x)(3x + 1) (8x – 3)

13. The width of a large square is 5x + 2 and the perimeter of a small square is 4x – 8.

 Find the difference between the areas of the two squares. Difference 24x2 + 24x

14. -2x4 – 5x3 + 9x – 1 is divided by x + 2. What is the remainder? -11

**Solve each of the following equations without a calculator.** (Quadratic Formula needs to be simplified, if used)

15. 50x2 = 72 16. x2 + 6x + 6 = 0 17. $tan\frac{5π}{6}=x$

x =  x =  x = $\frac{-\sqrt{3}}{3}$

18. When solving -4x2 – 21x– 3 = 0, what is the sum of the roots? -21/ 4

19. The function y = -16t2 + 450 models the height *y* in feet of a stone *t* seconds after it is dropped from the edge

 of a vertical cliff. How long will it take the stone to hit the ground? Round to the nearest tenth.

 **(Use a graphing calculator)**

 5.3 secs

20. Find the missing value to complete the square. 21. Find all zeros of 2x4 – 5x3 + 53x2 – 125x + 75 = 0.

 x2 + 3x + 9/ 4 Zeros: x = 1, x = 1.5, 

22. Write a polynomial function in standard form with zeros at -2 and 5 – 3*i*. **y = x3 – 8x2 + 14x + 68**

23. If $f(x)=\frac{12x^{2}+ 5x -2}{9x^{2}-4}$ find the following

23. Hole: ( -2/3 , 11/12 )

 Vertical Asymptote **x = 2/3**

 Horizontal Asymptote **y = 4/3**

 x- intercept (1/4 , 0)

Evaluate the following:

24. $log\_{27}\frac{1}{243}=x$ 25. $log\_{16}x=\frac{3}{4}$ 26. $log\_{2}\left(x^{2}+8\right)=log\_{2}x+ log\_{2}6$

 **x = -5 /3** **x = 8** **x = 2, x = 4**