

## SM3 HW #2-9 (Unit 2 Test Preview)

Date \_\_\_\_\_ Period \_\_\_\_\_

1)  $y = x^2 - 6x + 8$

- Convert the equation to intercept form by factoring.
- What are the x-intercepts?

- Find the vertex (an x-y pair).
  - Write the vertex form equation

$$y = x^2 - 14x + 40$$

- Find the vertex (an x-y pair).
  - Write the vertex form equation.

$$y = 3x^2 + 12x - 1$$

- Factor the equation.
  - Find the zeroes.

$$y = 5x^2 - 12x + 7$$

- Determine the slope intercept form equation that passes through:  $(-1, 5)$  and  $(2, -5)$

- State the Domain and Range of the function in interval form:

$$y = -3\sqrt{x+6} - 3$$

7) Solve by factoring:

$$2x^2 + 5x = 0$$

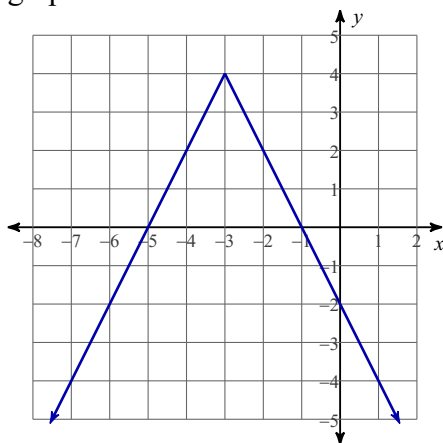
**Build a table then state the possible number of real and imaginary zeros for each function.**

8)  $f(x) = x^3 + x^2 - 15x + 25$

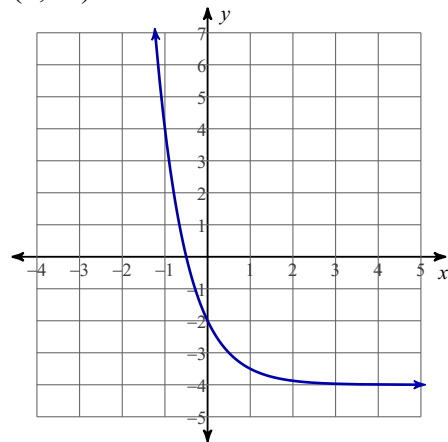
9) A piece of iron was heated to a temperature of 1500 F. It was then put into an oil bath that was at 100 F. After 1 minute the temperature of the iron was measure to be 983 F.

- Find the base "B" equation that models the situation.
- Convert your equation to a base 'e' exponential decay function.
- What will be the temperature after 3 minutes?

10) What is the equation represented by the graph?



11) What is the equation represented by the graph? The graph passes through (-1, 4) and (0, -2).



- a) Find the zeroes and their multiplicities
- b) Determine the end-behavior,
- c) Determine if the graph crosses or kisses at the zero
- d) Draw the general shape of the graph.

12)  $y = x^2(5x + 3)(x - 3)$

**Write a polynomial function in STANDARD FORM that has the following zeroes.**

13)  $-1, -3, 0$

14)  $2, -2 + 3i, -2 - 3i$

**Describe the end behavior of each function.**

15)  $f(x) = x^3 - 2x^5 + x + 4$

- 16) a) Write the polynomial in intercept form.  
b) find the zeroes of the polynomial  
 $f(x) = 5x^3 - x^2 - 5x + 1$

17) a) Write the polynomial in intercept form.

b) find the zeroes of the polynomial

$$f(x) = 3x^4 + x^3 - 3x^2 - x$$

**Find all zeros.**

18) a) Factor

b) find the zeroes

$$f(x) = x^4 - 25$$

19) Find the zeroes:

$$y = (7x - 1)(2x + 4)(x^2 + x - 1)$$

20) a) Factor the following

b) Find the zeroes of the polynomials

$$y = x^3 - 27$$

**Find all zeros.**

21)  $f(x) = x^4 - 5x^2 - 36$

22)  $f(x) = x^4 + 4x^2 - 12$

**Divide using one of the 3 methods (long division, synthetic division, or box division).**

**a) Write your answer as quotient plus remainder over divisor.**

**b) Is the divisor a factor of the polynomial?**

23) 
$$\frac{x^3 + 4x^2 - 4x - 16}{x^2 + 2}$$

24) Using one of the methods of polynomial division, find the first zero of the following function.

Try dividing by  $x - 2$  or  $x + 2$ :

$$y = 2x^3 + x^2 - 15x - 18$$