College Algebra **Name:** Key

Unit 2 LT 5 Practice **Date:** _____ **Period:** _____

Write a function in standard form of minimum degree with given zeros and multiplicities.

1.) 6 multiplicity of 2; 1 multiplicity of 1

$(x-6)(x-6)(x-1)$

$(x^2-12x+36)(x-1)$

x^3-12x^2+36x
$-x^2+12x-36$

$f(x)=x^3-13x^2+48x-36$

2.) -1; 1; and 0 multiplicity of 2

$(x+1)(x-1)(x)(x)$

$(x^2-1)(x^2)$

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

3.) 1; 1; 2

$(x-1)(x-1)(x-2)$

$(x^2-2x+1)(x-2)$

x^3-2x^2+x
$-2x^2+4x-2$

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

4.) 4 multiplicity of 1; -3 multiplicity of 2

$(x-4)(x+3)(x+3)$

$(x-4)(x^2+6x+9)$

x^3+6x^2+9x
$-4x^2-24x-36$

$f(x)=x^3+2x^2-15x-36$

5.) 2; and 5 with a multiplicity of 2

$(x-2)(x-5)(x-5)$

$(x-2)(x^2-10x+25)$

x^3-10x^2+25x
$-2x^2+20x-50$

$f(x)=x^3-12x^2+45x-50$

6.) 1/2; 2; -3

$x=1/2$
$2x=1$
$2x-1$

$(x-2)(x+3)(2x-1)$

$(x^2+x-6)(2x-1)$

$2x^3+2x^2-12x$
$-x^2-x+6$

$f(x)=2x^3+x^2-13x+6$

Write an equation in vertex form for the quadratic function given the vertex and a point on the graph.

9.) vertex (-3, 0), passing through (-5, -4)

h k x y

$-4 = A(-5+3)^2 + 0$

$-4 = 4A$

$-1 = A$

$f(x) = -1(x+3)^2$

10.) vertex (0,1), passing through (-1,0)

h k x y

$0 = A(-1-0)^2 + 1$

$0 = A(-1)^2 + 1$

$-1 = 1A$

$-1 = A$

$f(x) = -1(x)^2 + 1$

11.) vertex (2, 5), passing through (3, 7)

h k x y

$7 = A(3-2)^2 + 5$

$7 = 1A + 5$

$2 = A$

$f(x) = 2(x-2)^2 + 5$

12.) vertex (-3, 4), passing through (0,0)

h k x y

$0 = A(0+3)^2 + 4$

$0 = 9A + 4$

$-4 = 9A$

$-4/9 = A$

$f(x) = -4/9(x+3)^2 + 4$

Write an equation for a linear function given the following:

13.) $f(-4) = -2$ and $f(-3) = 5$

(-4, -2) (-3, 5)

$\frac{5 - -2}{-3 - -4}$ $\frac{7}{1} = 7$

$y + 2 = 7(x + 4)$

$y + 2 = 7x + 28$

$y = 7x + 26$

$f(x) = 7x + 26$

14.) $f(4) = -2$ and $f(-4) = -4$

(4, -2) (-4, -4)

$\frac{-4 - -2}{-4 - 4}$ $\frac{-2}{-8}$ $\frac{1}{4}$

$y + 2 = 1/4(x - 4)$

$y + 2 = 1/4x - 1$

$y = 1/4x - 3$

$f(x) = 1/4x - 3$

15.) $f(-4) = 2$ and $f(0) = -5$

(-4, 2) (0, -5)

$\frac{-5 - 2}{0 - -4}$ $\frac{-7}{4}$

$f(x) = -7/4x - 5$

16.) $f(0) = -2$ and $f(-5) = 3$

(0, -2) (-5, 3)

$\frac{3 - -2}{-5 - 0}$ $\frac{5}{-5}$

$m = -1$

$f(x) = -x - 2$