SECTION 4.5: SOLVING A POLYNOMIAL FUNCTION

Homework: _____

Learning Targets:

4c. Factor polynomial functions by graphing, grouping, and quadratic techniques.

4d. Solve polynomial functions by graphing and factoring.

Given factors, graph the function: Graph the _____ (opposite of _____) and the *y*-intercept by _____ the _____

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

Multiplicity: A polynomial function has multiplicity when it has _____ factors

$y = (x - 3)(x - 2)(x - 2)$ $y = -x(x + 5)(x + 1)^2$

Finding the zeros and factors from a graphing calculator: Plug the function into _____. Find the zeros (where the graph _____ the x-axis). Plug those zeros into _____, remembering to do the _____

$f(x) = x^3 - 2x^2 - 5x + 6$

Solving by Factoring: Move everything over so that the equation equals _____. Factor the polynomial _____ and set each factor equal to _____.

$2x^4 + 4x^3 - 16x = 8x^2$

Graph each function given the factors.

1. $y = 2(x + 5)(x - 3)(x + 1)$

2. $y = -4(x + 2)(x - 4)(x - 4)$

3. $y = x(x - 2)(x + 1)(x - 3)$

Find the zeros by graphing in the calculator.

6. $f(x) = x^3 - 7x - 6$

7. $f(x) = -2x^3 + 6x^2 - 8$

Solve by Factoring

8. $x^3 + 5x^2 - 6x = 0$

9. $x^3 + x^2 = 4x + 4$