① Solve $x^2 = -5x$ with graphing calculator

Intersect Method   Zero Method

Zeros and Roots   The x-values for which a function $f(x)$ is 0 are called the *zeros* of the function.

The x-values for which an equation such as $f(x) = 0$ is true are called the *roots* of the equation.

② Find the zeros of the function

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

An nth-degree polynomial function will have at most n zeros.

When a polynomial is written as a product, we say it is _____.

The zeros of a polynomial function are zeros described by the _____ of the polynomial.

③ Solve $(x-2)(x+5)=0$

④ Given $F(x) = x(2x+5)$, find the zeros of the function.

To _____ an expression means to write it as a product.

To factor out the Greatest Common Factor (GCF) we will do _____ _____.

(5) Factor out the GCF.

a) $6x^3 - 24$

b) $12r^2s^3 - 9r^5s^6 + 15r^3s^2$

c) $-5x^2 + 10x - 25$

d) $-4x^4 + 6x^3 - 2x^2$

Factoring by Grouping

(6) Factor $(x-2)(x^2-3) + (x-2)(5-3x^2)$

(7) Factor by Grouping

a) $b^3 - b^2 + 2b - 2$

b) $t^3 + 6t^2 - 2t - 12$

c) $ax - bx + by - ay$

(8) Solve $8x^2 = 40x$

To Use the Principle of Zero Products

1. Write an equivalent equation with 0 on one side, using the addition principle.
2. Factor the nonzero side of the equation.
3. Set each factor that is not a constant equal to 0.
4. Solve the resulting equations.