

MATH 1010 ~ Intermediate Algebra Chapter 5: POLYNOMIALS AND FACTORING

Section 5.6: Solving Polynomial Equations by Factoring

Objectives:

- * Use the zero-factor property to solve equations.
- * Solve quadratic equations by factoring.
- * Solve higher-degree polynomial equations by factoring.
- * Solve application problems by factoring.

$2x-1=0$ $x^2-3x-10=0$

$x=?$

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

Solving Polynomial Equations by Factoring

Zero-Factor Property

if $ab=0$, then $a=0$ or $b=0$.

a) $2x^2 - 9x - 5 = 0$

b) $4x^3 - 32x^2 + 64x = 0$

c) $x^3 - 3x^2 - 4x + 12 = 0$

① EXAMPLE:

Solve for x.

a) $2x^2 - 3x = 2x + 12$

b) $x^2 + 8x + 16 = 0$

c) $(x - 6)(x + 4) = -9$

② EXAMPLE:

Solve for x.

a) $4x^2(3x - 1) - 9(3x - 1) = 0$

b) $x^3 + 18x^2 = -45x$

Applications:

- a) The height of a triangle is 2 inches less than its base.
The area of the triangle is 60 square inches.
Find the base and height of the triangle.

- b) A penny is dropped from the roof of a building 256 feet above the ground.
The height (h) in feet of the penny after t seconds is modeled by the equation $h = -16t^2 + 256$.
How long does it take to hit the ground?