5.6 Solving Polynomial Equations

May 02, 2011

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) \( x^3 - 3x^2 - 4x + 12 = 0 \)
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EXAMPLE:
Solve for x.

a) \[ 2x^2 - 3x = 2x + 12 \]

b) \[ x^2 + 8x + 16 = 0 \]

c) \[ (x - 6)(x + 4) = -9 \]

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?