

Lesson 29 Section 5.8

Using Factoring to Solve Some Equations.

Principle of Zero Products: If two factors have a product of 0, at least one of the factors must be zero. $ab = 0 \rightarrow a = 0$ or $b = 0$

Solve:

1) $(x - 2)(x + 3) = 0$

2) $3y(2y + 1)(y - 5) = 0$

Steps for Solving Some Polynomial Equations:

1. Write the polynomial in descending order set equal to zero.
2. Factor the polynomial completely using appropriate means.
3. Apply the Principle of Zero Products rule by setting each factor equal to zero.
4. Solve each equation.

Solve:

3) $x^2 - 6x + 8 = 0$

4) $m^2 - 9m = 0$

5) $6a^2 = 8a$

6) $y^2 - 25 = 0$

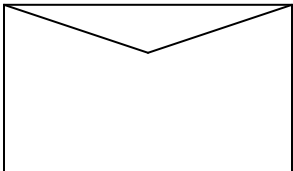
7) $a^3 - 3a^2 = 40a$

8) $(r-3)(r+2) = 14$

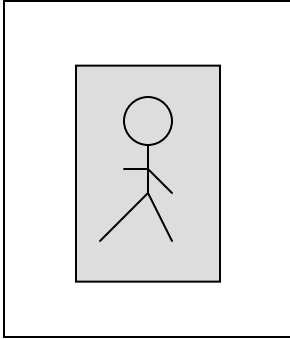
9) If $f(x) = 6x^2 + 19x$, find all a , such that $f(a) = 7$

Application Problems:

- 1) An envelope with an area of 96 square centimeters has a length 4 cm more than its width. Find the length and width.



- 2) A picture frame measures 14 cm by 20 cm and 160 square cm of the picture shows. (See picture below.) Find the width of the frame.



- 3) Three consecutive **even** integers are such that the square of the first plus the square of the third is 136. Find the 3 integers.

- 4) A company that makes cabinet sets has the following revenue and cost functions to make x sets of cabinets (in thousands of dollars).

$$R(x) = 2x^2 + x$$

$$C(x) = x^2 - 2x + 10$$

How many cabinets should be made for the company to break even?

Pythagorean Theorem:

The two shorter sides of a right triangle are called legs and the longest side is called the hypotenuse. Legs are usually labeled a and b and the hypotenuse is labeled c . There is a theorem, called the Pythagorean Theorem that relates the lengths of the three sides of a right triangle.

$$a^2 + b^2 = c^2$$

- 5) The deck behind a house is a right triangle, where one side is 7 feet longer than the smallest side and the longest side is 8 feet longer than the smallest side. Find the length of the 3 sides.

