Sec 4.1

Solving Polynomial Equations

Recall: Solving an equation means finding the value of a variable in an equation.

Ex:

Solve: 1/ linear $3x+7=5$

2/quadratic $4x^2-4x-3=0$

Oct 21-3:42 PM

Solve the following linear equations:

(a) $5x + 15 = 0$

(b) $7x - 4 = -3x + 26$

(c) $5(a + 1) = 0$

May 8-8:06 PM

BIG IDEA

When two or more variables are multiplied together for a product of ZERO, at least one of the unknowns must be a zero.

$$a \cdot b = 0$$

Case 1

a = 0 and "b" is a number

Case 2

b = 0 and "a" is a number

$$a \cdot b \cdot c \cdot d = 0$$

Oct 8-4:47 PM

Solve the following:

$$(x+1)(x-5) = 0$$

This is asking, when does the graph f(x) have y values equal to zero.

f(x) = (x+1)(x-5)

Oct 8-4:50 PM

Solving for a Product of ZERO, in Factored form

Solve for the given unknowns:

(a) $(x)(x+1) = 0$

(b) $(x - 3)(x + 7) = 0$

(c) $(2x - 1)(3x + 5) = 0$

(d) $(x + 5)(x - 7)(x - 12) = 0$

May 8-8:08 PM

Solving for a Product of ZERO, NOT in factored form

Solve for the given unknowns:

(a) $x^2 - 8x = 0$

(b) $x^2 + 7x + 12 = 0$

(c) $2x^2 - 13x + 15 = 0$

(d) $x^2 - 9 = 0$

May 8-8:08 PM

Solving for a Quadratic - Mixed Types

Solve for the given unknowns:

(a) $x^2 = 12x$

(b) $x^2 + 8x = -12$

(c) $x^2 + 2 = -3x$

(d) $3x^2 = 27$

May 8-8:08 PM

Success Criteria

- collect all terms to one side, leave a Zero on the other side
- put in factored form to take advantage of the following concept
- (a)(b) = 0, "a" or "b" must be zero, find the value that will make each bracket equal Zero

Oct 8-4:53 PM

What happens if the equation isn't in an easy form?

EX: Solve $12 = x(x-1)$

Oct 21-3:42 PM

How do you solve a polynomial of order greater than 2?

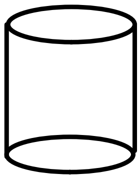
Oct 21-3:42 PM

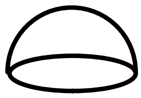
We can use "solving polynomials" for word problems (the same as with quadratics) to find the solution to a more complex question.

EX: What are the possible values for the radius of a cylindrical silo with a height of 12m with a hemispherical roof if the volume is $\frac{704\pi}{3}$

$V_{cyl} = \pi r^2 h$

$V_{hemisphere} = \frac{\frac{4}{3}\pi r^3}{2}$





Oct 21-3:42 PM

Read Ex 3 on p200

Oct 21-3:42 PM

Homework

p204 #2abef, 9d, 10, 13

Oct 21-3:42 PM