EOC Review Topics

EOC Review: Solving Equations with Technology

Standards

A2. F.BF.A.1 Write a function that describes a relationship between two quantities.

A2.A.REI.D.6 Explain why the x-coordinates of the points where the graphs of the equations $y = $ f(x) and $y = $ g(x) intersect are the solutions of the equation f(x) = g(x); find the approximate solutions using technology.

A2.A.CED.A.1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, radical and exponential functions.

Objective

SWBAT use technology **IOT** solve problems involving linear, quadratic, polynomial, radical and exponential functions

Key Concepts

Fundamental Theorem of Algebra- every non-zero, single variable, degree $\boldsymbol{n}$ polynomial with complex coefficients has counted with multiplicity, exactly $\boldsymbol{n}$ complex roots.

Essential Questions

What will it look like if there is no solution? In what ways can we solve functions?

Examples

Solve each equation by graphing and using technology

1. (I do) $3(2x - 1) = 11x$

2. (I do) $3|x + 2| - 1 = 8$

3. (We do) At a bookstore, used hardcover books sell for $8 each and used softcover books sell for $2 each. You purchase 36 used books and spend $144.

4. (We do) $2x^2 - 5x - 3 = 0$

5. (They do) When an object is dropped from a height of 5 feet and falls to the ground under the force of gravity its' height y, in feet, x seconds after being dropped is given by
$$y = -2x^2 + 5$$

6. (They do) $2x^3 + 2x^2 - 4x = 0$

7. $\sqrt{x + 2} - 3 = 2x$

8. $2^{x+1} = 25$

Independent practice

Solve each equation by graphing and using technology.

1. $5x + 4 = 2x + 10$

$$x = 2$$

2. $|5 - 2x| + 3 = 8$

$$x = \{0, 5\}$$

3. $\begin{cases} 2x + 4y = 12 \\ x + y = 2 \end{cases}$

$$(-2, 4)$$

4. $x^2 - 7x = -12$

$$x = \{3, 4\}$$

5. $4x^3 = 4x^2 + 3x$

$$x = \left\{ -\frac{1}{2}, 0, \frac{3}{2} \right\}$$

6. $2 + \sqrt{3x - 2} = 6$

$$x = 6$$

7. $7 - 5^{2x-1} = 4$

$$x = 0.84$$

8. Three times the square of a number is 5.

$$3x^2 = 5$$

$$x = \{-1.29, 1.29\}$$