7.7 Notes

Tuesday, May 12, 2015 12:38 PM

Section 7.7 – Solving Quadratic Equations Using the Quadratic Formula

- Solving Using the Quadratic Formula
  - You can use the quadratic formula to solve any equation.
  - $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$
  - To do this, set your equation equal to zero, then sub into the equation.
  - Inadmissible solution
    - A root of a quadratic equation that doesn't actually lead to a solution that works in the original equation.
    - Always sub into your original equation to find this buggers.
  - If $b^2 - 4ac$ is negative, you won't actually get an answer.
  - If $b^2 - 4ac$ is a perfect square, you can factor it to get your answer.

7.7 Examples

1. Solve the following equation: $6x^2 - 3 = 7x$. $-7x \quad -7x$

$6x^2 - 7x - 3 = 0$

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

$x = \frac{-(-7) \pm \sqrt{(-7)^2-4(6)(-3)}}{2(6)}$

$x = \frac{7 \pm \sqrt{49+72}}{12}$

$x = \frac{7 \pm \sqrt{121}}{12}$

$x = \frac{7 \pm 11}{12}$

$x = \frac{7+11}{12}$ $\quad x = \frac{7-11}{12}$

$x = \frac{18}{12}$ $\quad x = \frac{-4}{12}$

$x = \frac{3}{2}$ or 1.5 $\quad x = -\frac{1}{3}$ or $-0.\overline{3}$

2. A store rents an average of 750 video games each month for $4.50 each. The owners of the store want to raise the rates to increase the revenue to $7000 per month. However, for every $1 they increase, they know they rent 30 less games per month. The following relates the price, p, and revenue, r.

$$(4.5 + p)(750 - 30p) = r$$

Can the owners increase the rental rate enough to generate revenue of $7000?

$(4.5+p)(750-30p) = 7000$

$3375 + 750p - 135p - 30p^2 = 7000$ $\quad -7000$

$\frac{-30p^2}{-5} + \frac{615p}{-5} - \frac{3625}{-5} = \frac{0}{-5}$

$6p^2 - 123p + 725 = 0$

$x = \frac{-(-123) \pm \sqrt{(-123)^2-4(6)(725)}}{2(6)}$

$x = \frac{123 \pm \sqrt{-2271}}{12}$

$\sqrt{-2271}$ is impossible ∴ no solution.

It is impossible to generate $7000 of revenue.

p. 20 # 2-5, 7 ← (a, c) only

THIBEAULT → Remember to assign the table to students!