



Topic/Objective: 2.2 Quadratic Formula

Name:

Class/Period: 4

Date: 11/14/14

Essential Question: How do you apply the Quadratic Formula to solve quadratics?

Questions:

Notes: $ax^2 + bx + c = 0$

to (1) $\frac{ax^2 + bx + c}{a} = \frac{0}{a}$

Leading coefficient must be 1 $x^2 + \frac{b}{a}x + \frac{c}{a} = 0$

$$(x + \frac{b}{2a})^2 =$$

$$(\frac{b}{2a})^2 = \frac{b^2}{4a^2}$$

$$\frac{1}{2}b = \frac{1 \cdot b}{2 \cdot a} \quad x^2 + \frac{b}{a}x + \frac{b^2}{4a^2} - \frac{b^2}{4a^2} + \frac{c}{a} = 0$$

$$\frac{1}{2}b = \frac{b}{2a} \quad (x + \frac{b}{2a})^2 = \frac{b^2}{4a^2} - \frac{c}{a} \cdot \frac{4a}{4a}$$

$$(x + \frac{b}{2a})^2 = \frac{b^2}{4a^2} - \frac{4ac}{4a^2}$$

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

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

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

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

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

p. 38 #5

~~$10x^2 + 4x - 5 = 0$~~

~~$10x^2 + 4x + 4 - 4 = 5$~~

NO, Mrs. Ruff!

$\frac{b}{2a} = \frac{-4}{2} = -2$
 $(\frac{b}{2a})^2 = (-2)^2 = 4$

$\frac{1}{2} \cdot b = \frac{1}{2} \cdot \frac{-4}{5} = \frac{-2}{5} = -\frac{2}{5}$

$(\frac{1}{2a})^2 = (\frac{1}{5})^2 = \frac{1}{25}$

$(x + \frac{b}{2a})$

$\sqrt{27} = \sqrt{9 \cdot 3}$
 $= \sqrt{9} \cdot \sqrt{3}$
 $= 3\sqrt{3}$

$\sqrt{50} = \sqrt{25 \cdot 2}$
 $= \sqrt{25} \cdot \sqrt{2}$
 $= 5\sqrt{2}$

$x^2 + \frac{2}{5}x - \frac{1}{2} = 0$

$x^2 + \frac{2}{5}x + \frac{1}{25} - \frac{1}{25} = \frac{1}{2}$

$(x + \frac{1}{5})^2 - \frac{1}{25} = \frac{1}{2}$

$+ \frac{1}{25} \qquad + \frac{1}{25}$

$(x + \frac{1}{5})^2 = \frac{1}{2} + \frac{1}{25}$

$\sqrt{(x + \frac{1}{5})^2} = \sqrt{\frac{2+25}{50}} = \sqrt{\frac{27}{50}}$

$x + \frac{1}{5} = \pm \sqrt{\frac{27}{50}}$

$x = \pm \sqrt{\frac{27}{50}} - \frac{1}{5}$

$= \pm \frac{3\sqrt{3}}{5\sqrt{2}} - \frac{1}{5}$

$-\frac{1}{5} \pm \sqrt{\frac{27}{50}}$

Ex The sum of the squares of two consecutive integers is 613. Find the integers.

consecutive
 $a = b + 1$

1) 2, 3
 (H) 2+3

$$a^2 + b^2 = 613$$

$$(b+1)^2 + b^2 = 613$$

$$(b+1)(b+1) + b^2 = 613$$

$$b^2 + b + b + 1 + b^2 = 613$$

$$2b^2 + 2b + 1 = 613$$

$$\frac{2b^2}{2} + \frac{2b}{2} - \frac{612}{2} = 0$$

$$b^2 + b - 306 = 0$$

$$a = 1$$

$$b = 1$$

$$c = -306$$

$$a = b + 1$$

$$b = a - 1$$

$$b = \frac{-1 \pm \sqrt{1^2 - 4(1)(-306)}}{2(1)}$$

$$b = \frac{-1 \pm \sqrt{1225}}{2} = \frac{-1 \pm 35}{2}$$

$$b = -18 \text{ or } b = 17$$

17, 18
 or
 -17, -18

Hw p. 40 2E 9, 10
 2F 1, 3, 4