

January 23, 2017

* Quiz #2 - Wednesday

* Completing the Square

① $ax^2 + bx + c = 0$
where $a = 1$

② $ax^2 + bx + c = 0$
where $a \neq 1$

$a = 5$

$$\frac{5x^2}{5} - \frac{2x}{5} + \frac{15}{5} = \frac{0}{5}$$

$$x^2 - \frac{2}{5}x + 3 = 0$$

Jan 23-10:55 AM

1.6

$$+\sqrt{x-1} - \sqrt{3x+1} = -2$$

* Start isolate one radical
making sure that it is positive

$$\left(\sqrt{x-1}\right)^2 = \left(\sqrt{3x+1} - 2\right)^2$$

$$x-1 = (\sqrt{3x+1}-2)(\sqrt{3x+1}+2)$$

$F: (\sqrt{3x+1})(\sqrt{3x+1}) = 3x+1$
 $O: (\sqrt{3x+1})(-2) = -2\sqrt{3x+1}$
 $L: (-2)(\sqrt{3x+1}) = -2\sqrt{3x+1}$
 $C: (-2)(2) = 4$

$$x-1 = 3x+1 - 4\sqrt{3x+1} + 4$$

$$x-1 = 3x - 4\sqrt{3x+1} + 5$$

$$\frac{-2x-6}{-4} = \frac{-4\sqrt{3x+1}}{-4}$$

$$\frac{2}{7}x + \frac{3}{2} = \sqrt{3x+1}$$

$$\left(\frac{2}{7}x + \frac{3}{2}\right)^2 = \left(\sqrt{3x+1}\right)^2$$

$$\left(\frac{2}{7}x + \frac{3}{2}\right)\left(\frac{2}{7}x + \frac{3}{2}\right) = 3x+1$$

$$\frac{4}{49}x^2 + \frac{6}{7}x + \frac{9}{4} = 3x+1$$

$$x^2 + 4x + 9 = 12x + 4$$

$$x^2 - 8x + 5 = 0$$

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

$$\{5, 1\}$$

Jan 23-11:02 AM

$$\sqrt{x-1} - \sqrt{3x+1} = -2$$

$x = 5$

$$\sqrt{5-1} - \sqrt{3(5)+1} = -2$$

$$\sqrt{4} - \sqrt{16} = -2$$

$$2 - 4 = -2$$

$x = 1$

$$\sqrt{1-1} - \sqrt{3(1)+1} = -2$$

$$\sqrt{0} - \sqrt{4} = -2$$

$$0 - 2 = -2$$

$$-2 = -2 \checkmark$$

Jan 23-11:35 AM

Complete the Square

$$x^2 - x + 1 = 0$$

$$x^2 - x + \frac{1}{4} = -\frac{1}{4} + \frac{1}{4}$$

$$\left(x - \frac{1}{2}\right)^2 = \frac{-4+1}{4} = -\frac{3}{4}$$

$$\sqrt{\left(x - \frac{1}{2}\right)^2} = \sqrt{-\frac{3}{4}}$$

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

$$x = \frac{1}{2} \pm \frac{i\sqrt{3}}{2}$$

$$x = \frac{1 \pm i\sqrt{3}}{2}$$

Jan 23-11:38 AM