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 $a\neq 1$

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

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

Jan 23-9:53 AM

1.6

$\sqrt{x-1}-\sqrt{3x+1}=-2$ {3, 13}

* First isolate one radical, making sure 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: $(\sqrt{3x+1})(-2)=-2\sqrt{3x+1}$

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

L: $(-2)(-2)=4$

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

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

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

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

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

$(\frac{1}{2}x+\frac{3}{2})(\frac{1}{2}x+\frac{3}{2})=3x+1$ FOIL

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

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

$x^2+6x+9=12x+4$

$x^2-6x+5=0$

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

{5, 1}

Jan 23-10:07 AM

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

$x=5$

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

$\sqrt{4}-\sqrt{15+1}=-2$

$2-4=-2$

$-2=-2$ ✓

$x=1$

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

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

$0-2=-2$

$-2=-2$ ✓

Jan 23-10:37 AM

$\left(\sqrt{2x}\right)^2=(-4)^2$ no solution

$2x=16$

$x=8$

$\sqrt{2(8)}=-4$

$\sqrt{16}=-4$

$4\neq -4$

Jan 23-10:39 AM

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

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

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

$\left(\frac{1}{2}\right)^2=\frac{1}{4}$

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

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

Jan 23-10:43 AM