Stick Quiz

1 Find c that makes $x^2 + x + c$ a perf
the trinomial as binomial squared.

$c = \frac{1}{4}$

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

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

2 Solve $x^2 + 2x - 24 = 0$ by completing the square.

$x = -6, 4$

3 Solve $x^2 + 2x + 26 = 0$ by completing the square.

$x = -1 + 5i$

$x = -1 - 5i$

Solve $x^2 + 2x - 24 = 0$ by completing the square.

$+24 \quad +24$

$x^2 + 2x + 1 = 24 + 1$

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

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

$x + 1 = \pm 5$

$-1 \quad -1$

$x = -1 + 5$

$x = -1 - 5$

$x = 4, -6$

Solve $x^2 + 2x + 26 = 0$ by completing the square.

$-26 \quad -26$

$x^2 + 2x + 1 = -26 + 1$

$c = 1^2 = 1$

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

$x + 1 = \pm 5i$

$-1 \quad -1$

$x = -1 + 5i$

$x = -1 - 5i$

$x^2 + 2x - 12 = 0$

Questions On Homework

b. $2x+4=x^2$

$-2x \quad -2x$

$4=x^2-2x$

$x^2-2x+1=4+1$

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

$4=x$

$x=4$

$3x^2+2x-1=0$

$+1 \quad +1$

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

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

$c=\left(\frac{b}{2}\right)^2=\left(\frac{2}{3}\div 2\right)^2$

$\left(\frac{2}{3}\cdot\frac{1}{2}\right)^2$

$\left(\frac{2}{6}\right)^2=\left(\frac{1}{3}\right)^2=\left(\frac{1}{9}\right)$

$\sqrt{\left(x+\frac{1}{3}\right)^2}=\sqrt{\frac{4}{9}}$

$x+\frac{1}{3}=\pm\frac{2}{3}$

$-\frac{1}{3} \quad -\frac{1}{3}$

$\frac{2}{3}-\frac{1}{3}=\frac{1}{3}$

$-\frac{2}{3}-\frac{1}{3}=-\frac{3}{3}=-1$

I can... find roots/zeros/solutions by using the quadratic formula.

Introducing

Quadratic Formula

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

and....

The Discriminant = $b^2 - 4ac$

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

Stuff under the square root!

When the discriminant is:

Positive: There are 2 real solutions

Zero: There is 1 real solution

Negative: There are 2 imaginary solutions

What does that mean????

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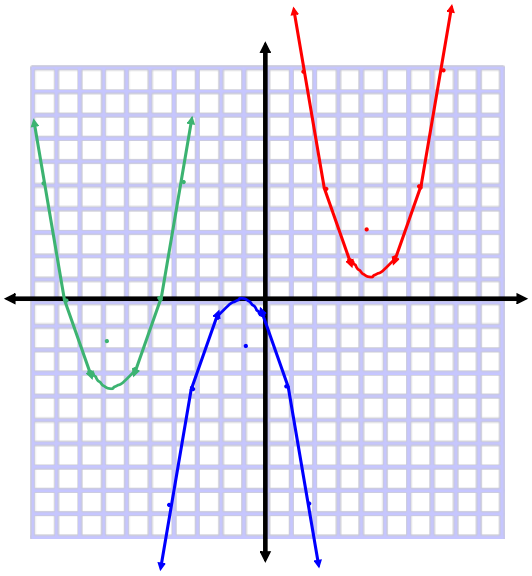
What does that mean????



Positive: There are 2 real solutions

Zero: There is 1 real solution

Negative: There are 2 imaginary solutions

1. **Determine how many solutions then solve by using the Quadratic Formula.**

a b c

$x^2 - 8x - 33 = 0$

$a=1 \quad b=(-8) \quad c=-33$

Discriminant $b^2 - 4ac$

$64 - 4(1)(-33)$

196

$\rightarrow$ 2 real solutions

Substitute into the Quadratic Formula $\dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$x = \dfrac{8 \pm \sqrt{196}}{2(1)}$

$x = \dfrac{8 \pm 14}{2}$

$x = \dfrac{8+14}{2} = 11 \qquad x = \dfrac{8-14}{2} = -3$

$x = 11, -3$

2. **Determine how many solutions then solve by using the Quadratic Formula.**

$x^2 - 34x + 289 = 0$

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

$a=1 \quad b=-34 \quad c=289$

$x = \dfrac{34 \pm \sqrt{1156 - 4(1)(289)}}{2}$

$\dfrac{34 \pm \sqrt{0}}{2} = \dfrac{34}{2} = 17$

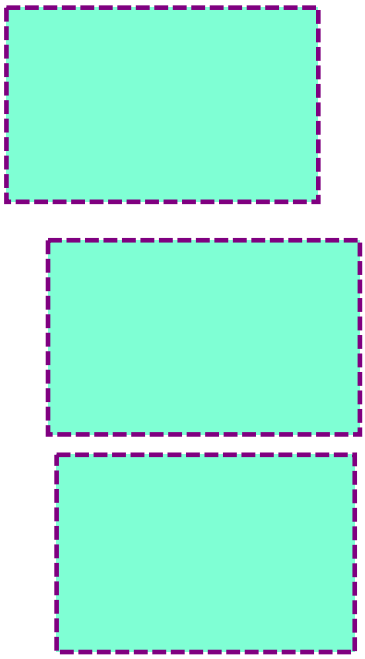
Disc. 0
1 Real. Sol.
$x = 17$

Determine how many solutions then solve by using the Quadratic Formula.

3. $x^2 - 6x + 2 = 0$

4. $x^2 + 13 = 6x$

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



Homework 4.6

Pg. 270

#15-31o, 33, 34, 58

#33 is asking to find a max and then zeros