

January 13, 2017
 * Quiz #1 - Wednesday
 • R1 - Solving Equations

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#24

$$x = -\frac{18}{17}$$

$$4[1 - 3(x+1)] = 5(x+2)$$

$$4\left[1 - 3\left(-\frac{18}{17} + 1\right)\right] = 5\left(-\frac{18}{17} + 2\right)$$

$$4\left[1 - 3\left(\frac{-18+17}{17}\right)\right] = 5\left(\frac{-18+34}{17}\right)$$

$$4\left[1 - 3\left(-\frac{1}{17}\right)\right] = 5\left(\frac{16}{17}\right)$$

$$4\left[1 + \frac{3}{17}\right] = \frac{80}{17}$$

$$4\left[\frac{17+3}{17}\right]$$

$$\frac{4}{17}[20]$$

$$\frac{80}{17} = \frac{80}{17} \checkmark \text{ (smiley face)}$$

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1.) Conditional: it will be true for some values of the variable

$$2(x+5) = 20$$

$$2x+10 = 20$$

$$2x = 10$$

$$x = 5$$

Solution set: {5}

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2.) Identity: is true for all values

$$-6 + 2x = 2(x-3)$$

$$-6 + 2x = 2x - 6$$

$$+6 - 2x \quad -2x + 6$$

$$0 = 0 \text{ true}$$

$$x = 4$$

$$-6 + 2(4) = 2(4) - 6$$

$$-6 + 8 = 8 - 6$$

$$2 = 2$$

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3.) Contradiction: is not true for any value
 no solution

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$$3x^2 + 15x + 18 = 0$$

- ① factor: if factorable
- ② Completing the square
- ③ Quadratic Formula

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$3x^2 + 15x + 18 = 0$
 factorable if the "Discriminate" is a Perfect Square.
 $b^2 - 4ac$
 $(15)^2 - 4(3)(18)$
 $225 - 12(18)$
 $225 - 216$
 $9 = 3$
 $3x^2 + 15x + 18 = 0$
 $3x^2 + 15x + 18 = 0$ ac & b method
 $3x^2 + 9x + 6x + 18 = 0$ $3(18) = 54$; $b = 15$
 $3x(x+3) + 6(x+3) = 0$
 $(x+3)(3x+6) = 0$
 Zero Product Property
 $ab = 0$
 $a = 0$
 $b = 0$
 ① $x+3 = 0$
 $x = -3$
 ② $3x+6 = 0$
 $3x = -6$
 $x = -2$

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$ax^2 + bx + c = 0$
 Solve for x !
 ① $\frac{ax^2 + bx}{a} = \frac{-c}{a}$
 $x^2 + \frac{b}{a}x = \frac{-c}{a}$
 ② $\left(\frac{b}{2a}\right)^2 = \frac{b^2}{4a^2}$ *add to both sides*
 $x^2 + \frac{b}{a}x + \frac{b^2}{4a^2} = \frac{-c}{a} + \frac{b^2}{4a^2}$
 Perfect Square Trinomial
 $\left(x + \frac{b}{2a}\right)^2 = \frac{-c}{a} + \frac{b^2}{4a^2}$
 $= \frac{-c \cdot 4a + b^2}{4a^2}$
 $\sqrt{\left(x + \frac{b}{2a}\right)^2} = \sqrt{\frac{b^2 - 4ac}{4a^2}}$
 $x + \frac{b}{2a} = \pm \sqrt{\frac{b^2 - 4ac}{4a^2}}$
 $= \pm \frac{\sqrt{b^2 - 4ac}}{2a}$
 $x + \frac{b}{2a} = \pm \frac{\sqrt{b^2 - 4ac}}{2a}$
 $x = -\frac{b}{2a} \pm \frac{\sqrt{b^2 - 4ac}}{2a}$
 $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

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$x^2 + 10x + 25 = 0$
 $x^2 + 10x = -25$
 ① $10 \cdot \frac{1}{2} = 5$
 ② $(5)^2 = 25$ *add to both sides*
 $x^2 + 10x + 25 = -25 + 25$
 $\sqrt{(x+5)^2} = \sqrt{0}$
 $x + 5 = 0$
 $x = -5$
 $(-5)^2 + 10(-5) + 25 = 0$
 $25 - 50 + 25 = 0$
 $-25 + 25 = 0$
 $0 = 0$

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$(x+5)(x+5) = 0$
 ① $x+5 = 0$
 $x = -5$
 ② $x+5 = 0$
 $x = -5$



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