

April 14, 2015

#3)  $(x-3)^2 + 5 = 0$

$$\sqrt{(x-3)^2} = \pm\sqrt{-5}$$

$$x-3 = \pm i\sqrt{5}$$

$$x = 3 \pm i\sqrt{5}$$

Ch

$$(\cancel{3} - i\sqrt{5} - \cancel{3})^2 + 5 = 0$$

$$(-i\sqrt{5})^2 + 5 = 0$$

$$i^2 \cdot 5 + 5 = 0$$

$$(-1) \cdot 5 + 5 = 0$$

$$-5 + 5 = 0$$

$$0 = 0 \checkmark$$

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#4)  $(3x-2)^2 - 7 = 0$

$$\sqrt{(3x-2)^2} = \pm\sqrt{7}$$

$$3x-2 = \pm\sqrt{7}$$

$$3x = 2 \pm \sqrt{7}$$

$$x = \frac{2 \pm \sqrt{7}}{3}$$

ck

$$\left(\cancel{3} \left(\frac{2-\sqrt{7}}{\cancel{3}}\right) - \cancel{2}\right)^2 - 7 = 0$$

$$\left(\cancel{2} - \sqrt{7} - \cancel{2}\right)^2 - 7 = 0$$

$$(-\sqrt{7})^2 - 7 = 0$$

$$7 - 7 = 0$$

$$0 = 0 \checkmark$$

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③ Completing the Square

\* Perfect Square Trinomial (PST)

$$(x+4)^2 = (x+4)(x+4)$$

$$= x^2 + 4x + 4x + 16$$

$$= x^2 + 8x + 16$$

PST

$$(x-5)^2 = x^2 - 10x + 25$$

$$(x+11)^2 = x^2 + 22x + 121$$

$$\left(x + \frac{3}{4}\right)^2 = x^2 + \frac{6}{4}x + \frac{9}{16}$$

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Completing the Square Steps

- Make the coefficient of the squared term "1".
- Isolate variable terms

$$x^2 - 4x - 1 = 0$$

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

- Complete the square using the "Two Steps" below

- $-4 \cdot \frac{1}{2} = -2 = -2$
- $(-2)^2 = 4$  *add to both sides of the equation*

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

PST

$$(x-2)^2 = 5$$

- Use Square Root Property

$$\sqrt{(x-2)^2} = \pm\sqrt{5}$$

$$x-2 = \pm\sqrt{5}$$

$$x = 2 \pm \sqrt{5}$$

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$$x = 2 \pm \sqrt{5}; \quad x^2 - 4x - 1 = 0$$

$$(2-\sqrt{5})^2 - 4(2-\sqrt{5}) - 1 = 0$$

$$(2-\sqrt{5})(2-\sqrt{5}) - 8 + 4\sqrt{5} - 1 = 0$$

$$\cancel{4} - \cancel{4\sqrt{5}} + \cancel{5} - \cancel{8} + \cancel{4\sqrt{5}} - \cancel{1} = 0$$

$$0 = 0 \checkmark$$

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$$x^2 - 5x + 2 = 3$$

$$x^2 - 5x = 1$$

- $-5 \cdot \frac{1}{2} = -\frac{5}{2}$
- $(-\frac{5}{2})^2 = \frac{25}{4}$  *add to both sides*

$$x^2 - 5x + \frac{25}{4} = 1 + \frac{25}{4}$$

PST

$$\sqrt{\left(x - \frac{5}{2}\right)^2} = \pm\sqrt{\frac{29}{4}}$$

$$x - \frac{5}{2} = \pm\sqrt{\frac{29}{4}}$$

$$x = \frac{5}{2} \pm \sqrt{\frac{29}{4}} = \frac{5 \pm \sqrt{29}}{2}$$

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$$x = \frac{5 - \sqrt{29}}{2}; x^2 - 5x + 2 = 3$$

$$\left(\frac{5 - \sqrt{29}}{2}\right)^2 - 5\left(\frac{5 - \sqrt{29}}{2}\right) + 2 = 3$$

$$\left(\frac{5 - \sqrt{29}}{2}\right)\left(\frac{5 - \sqrt{29}}{2}\right) - \frac{25 + 5\sqrt{29}}{2} + 2 = 3$$

$$\frac{25 - 10\sqrt{29} + 29}{4} - \frac{25 + 5\sqrt{29}}{2} + 2 = 3$$

$$\frac{54 - 10\sqrt{29}}{4} - \frac{50 + 10\sqrt{29}}{4} + 2 = 3$$

$$\frac{54 - 10\sqrt{29} - 50 + 10\sqrt{29}}{4} + 2 = 3$$

$$\frac{4}{4} + 2 = 3$$

$$1 + 2 = 3$$

$$3 = 3 \checkmark$$

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- ① Do 11.1 # 11 - # 20
- ② Due Friday
- a.) Complete the Square  
on  $ax^2 + bx + c = 0$
- b.) Do the Check of a.)

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