

November 4, 2015
Completing the Square
Steps

- ① If the coefficient of the squared variable is not a "1", then divide all terms by the coefficient.
- ② Isolate variable terms
- ③ \odot Multiply the coefficient of the variable to one, power by $\frac{1}{2}$ \rightarrow becomes "h"
- ④ \odot Square the result from ③, and add to both sides.
- ④ Factor the P.D.T into $(x-h)^2$
- ⑤ Use Square Root Property to solve
- ⑥ Check

Nov 4-10:06 AM

$$\frac{7x^2}{7} - \frac{x}{7} + \frac{5}{7} = \frac{0}{7}$$

$$x^2 - \frac{1}{7}x = -\frac{5}{7}$$

② $-\frac{1}{7} \cdot \frac{1}{2} = -\frac{1}{14} \rightarrow "h"$

④ $(-\frac{1}{14})^2 = \frac{1}{196}$

$$x^2 - x + \frac{1}{196} = -\frac{5}{7} + \frac{1}{196}$$

$$= \frac{-140 + 1}{196} = -\frac{139}{196}$$

$$\sqrt{(x - \frac{1}{14})^2} = \sqrt{-\frac{139}{196}}$$

$$x - \frac{1}{14} = \pm \frac{i\sqrt{139}}{\sqrt{196}}$$

$$x = \pm \frac{i\sqrt{139}}{14} + \frac{1}{14}$$

$$x = \frac{1}{14} \pm \frac{\sqrt{139}}{14} i \quad a+bi \text{ form!}$$

Nov 4-10:16 AM

Ok $x = \frac{1 + i\sqrt{139}}{14}$

$$7\left(\frac{1 + i\sqrt{139}}{14}\right)^2 - \left(\frac{1 + i\sqrt{139}}{14}\right) + 5 = 0$$

$$7\left(\frac{1 + 2i\sqrt{139} + i^2 139}{196}\right) - \frac{1 + i\sqrt{139}}{14} + 5 = 0$$

$i^2 = -1$

$$7\left(\frac{1 + 2i\sqrt{139} + i^2 139}{196}\right) - \frac{1 + i\sqrt{139}}{14} + 5 = 0$$

$$7\left(\frac{1 + 2i\sqrt{139} - 139}{196}\right) - \frac{1 + i\sqrt{139}}{14} + 5 = 0$$

$$7\left(\frac{-138 + 2i\sqrt{139}}{196}\right) - \frac{1 + i\sqrt{139}}{14} + 5 = 0$$

$$\frac{-138 + 2i\sqrt{139}}{28} - \frac{1 + i\sqrt{139}}{14} + 5 = 0$$

$$\frac{-138 - 2}{28} + 5 = 0$$

$$-\frac{140}{28} + 5 = 0$$

$$-5 + 5 = 0$$

$$0 = 0 \checkmark$$

Nov 4-10:34 AM

$$i \cdot i = i^2 = -1$$

Nov 4-10:36 AM

Due on Tuesday

$$ax^2 + bx + c = 0$$

Complete the Square
 \times Solve for x

Nov 4-10:37 AM