



Practice: Completing the Square

REFERENCE

Step 1

Rearrange
if Necessary

*move the constants
to one side

$$\begin{array}{r} x^2 - 6x + 9 = 25 \\ -9 \quad -9 \\ \hline x^2 - 6x = 16 \end{array}$$

Step 2

$+ (b/2)^2$
to both sides

$$\begin{array}{r} \left(\frac{-6}{2}\right)^2 \rightarrow (-3)^2 = 9 \\ x^2 - 6x + 9 = 16 + 9 \\ \hline x^2 - 6x + 9 = 25 \end{array}$$

Step 3

Factor & Solve

$$\begin{array}{r} x^2 - 6x + 9 = 25 \\ (x-3)^2 = 25 \\ \sqrt{(x-3)^2} = \sqrt{25} \\ x-3 = \pm 5 \\ x = 3 \pm 5 \\ \hline x = 8 \\ x = -2 \end{array}$$

Practice Problems:

- 1.) $x^2 - 6x - 16 = 0$
- 2.) $x^2 + 6x - 9 = 0$
- 3.) $x^2 + 2x - 7 = 0$
- 4.) $x^2 - 10x + 15 = 0$
- 5.) $x^2 + 6x + 9 = 0$
- 6.) $x^2 - 4x + 16 = 0$

Answer Key

01.) $x = 8, x = -2$

02.) $x = 1.24, x = -7.24$

03.) $x = 1.83, x = -3.83$

04.) $x = 8.16, x = 1.84$

05.) $x = -1.59, x = -4.41$

06.) $x = 2 \pm i\sqrt{2}$