

# Completing the Square Review

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11:39 AM

## PRE-CALCULUS 11 QUADRATIC FUNCTIONS COMPLETING THE SQUARE REVIEW

### A. Definitions

1. **completing the square:** a method of solving a quadratic equation that is not easily factored.
2. **roots:** the answer(s) to a quadratic equation or the x-intercepts of a quadratic function.

### B. Solving Quadratic Equations by Completing the Square

$$\begin{aligned} 1) \quad & \frac{1}{2}x^2 + 6x - 1 = 0 \\ & \frac{1}{2}x^2 + 6x = 1 \\ & \frac{1}{2}(x^2 + 12x) = 1 \\ & \frac{1}{2}(x^2 + 12x + 36) = 1 + 18 \\ & \frac{1}{2}(x+6)^2 = 19 \div \frac{1}{2} \\ & \pm \sqrt{(x+6)^2} = \pm \sqrt{38} \\ & x + 6 = \pm \sqrt{38} \\ & \quad \quad \quad -6 \quad \quad -6 \end{aligned}$$

$$X = -6 \pm \sqrt{38}$$

$$\begin{aligned} 2) \quad & -2x^2 - 3x + 7 = 0 \\ & -2x^2 - 3x = -7 \\ & -2(x^2 + \frac{3}{2}x) = -7 \\ & -2(x^2 + \frac{3}{2}x + \frac{9}{16}) = -7 - \frac{9}{8} \\ & -2(x + \frac{3}{4})^2 = -\frac{65}{8} \div -2 \\ & \pm \sqrt{(x + \frac{3}{4})^2} = \pm \sqrt{\frac{65}{16}} \\ & x + \frac{3}{4} = \pm \sqrt{\frac{65}{16}} \\ & \quad \quad \quad -\frac{3}{4} \quad \quad -\frac{3}{4} \end{aligned}$$

$$X = \frac{-3 \pm \sqrt{65}}{4}$$

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Assignment: Completing the Square Assignment #1 – 12

PRE-CALCULUS 11  
QUADRATIC FUNCTIONS  
COMPLETING THE SQUARE REVIEW ASSIGNMENT

A. Solve the following quadratic equations by completing the square.

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

2)  $x^2 + 6x + 4 = 0$

3)  $x^2 + 22 = 10x$

4)  $x^2 - 5x - 8 = 0$

5)  $2x^2 - 8x - 6 = 0$

6)  $2x^2 + 12x - 2 = 0$

7)  $3x^2 - 24x = 12$

8)  $-x^2 - 7x - 7 = 0$

9)  $-2x^2 - 10 = -20x$

10)  $\frac{1}{2}x^2 - 2x - 8 = 0$

11)  $\frac{1}{3}x^2 + 3x - 1 = 0$

12)  $\frac{1}{2}x^2 + 6x + 3 = 0$

Answers

1)  $1 \pm \sqrt{5}$

2)  $-3 \pm \sqrt{5}$

3)  $5 \pm \sqrt{3}$

4)  $\frac{5 \pm \sqrt{57}}{2}$

5)  $2 \pm \sqrt{7}$

6)  $-3 \pm \sqrt{10}$

7)  $4 \pm 2\sqrt{5}$

8)  $\frac{-7 \pm \sqrt{21}}{2}$

9)  $5 \pm 2\sqrt{5}$

10)  $2 \pm 2\sqrt{5}$

11)  $\frac{-9 \pm \sqrt{93}}{2}$

12)  $-6 \pm \sqrt{30}$