

Alg I 9.5 notes.notebook

Alg 1 Notes 9.5

Completing the Square

The **BIG** Idea...

Any quadratic equation can be solved by creating a perfect square trinomial on one side.

Example

$$x^2 - 8x = -3$$
$$x^2 - 8x + 4^2 = -3 + 16 \quad \leftarrow \text{add } (b/2)^2 \text{ to each side}$$
$$(x - 4)^2 = 13 \quad \leftarrow \text{a perfect square trinomial on the left side}$$
$$x - 4 = \pm\sqrt{13}$$
$$x = 4 \pm \sqrt{13}$$
$$x \approx 7.61, 0.39$$

Find the value for c that creates a perfect square trinomial.

1) $x^2 + 6x + c$

2) $x^2 - 22x + c$

3) $x^2 + 3x + c$

Solve by completing the square. Round to nearest hundredth if necessary.

4) $x^2 + 16x = 17$

5) $x^2 - 2x = 24$

6) $x^2 - 18x + 50 = 0$

7) $x^2 + 9x = 3$

Use Desmos to estimate the values for which $f(x)=3$. Then use completing the square to confirm the results algebraically.

9) $f(x) = x^2 - 6x - 5$

