

## 4.6: Completing the Square

Solve these Quadratic Equations.

1)  $s^2 = 169$

$\{\pm 13\}$

2)  $x^2 = 84$

$\{\pm 2\sqrt{21}\}$

3)  $4p^2 = 448$

$\{\pm 4\sqrt{7}\}$

4)  $7r^2 - 10 = 25$

$\{\pm \sqrt{5}\}$

5)  $\frac{t^2}{20} + 8 = 15$

$\{\pm 2\sqrt{35}\}$

6)  $4(x-1)^2 = 8$

$\{1 \pm \sqrt{2}\}$

7)  $2(x+2)^2 - 5 = 8$

$\{-2 \pm \frac{\sqrt{66}}{2}\}$

Solve using Completing the Square. Show all steps.

8)  $x^2 - 6x = -4$

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

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

$\{-1 \pm 2\sqrt{2}\}$

10)  $2x^2 - 8x = 22$

$\{2 \pm \sqrt{15}\}$

11)  $3x^2 + 6x = 1$

$\{-1 \pm \frac{2\sqrt{3}}{3}\}$

12)  $2x^2 + 8x - 15 = 0$

$\{-5 \pm \sqrt{67}\}$

13)  $x^2 + 10x = -29$

$\{-5 \pm 2i\}$

Convert these standard form equations to vertex form. Show all steps.

14)  $f(x) = x^2 - 4x + 13$

$f(x) = (x-2)^2 + 9$

15)  $g(x) = x^2 + 14x + 71$

$g(x) = (x+7)^2 + 22$

16)  $h(x) = 9x^2 + 18x - 3$

$h(x) = 9(x+1)^2 - 12$

17)  $f(x) = x^2 + 4x - 7$

$f(x) = (x+2)^2 - 11$

18)  $g(x) = x^2 - 16x + 2$

$g(x) = (x-8)^2 - 62$

19)  $h(x) = 2x^2 + 6x + 25$

$h(x) = 2(x+1.5)^2 + 20.5$