

63

Completing the Square

$$\frac{3x^2}{3} - \frac{36x}{3} + \frac{150}{3} = \frac{0}{3}$$

$$x^2 - 12x + 50 = 0$$

$$x^2 - 12x = -50$$

$$x^2 - 12x + 36 = -50 + 36$$

$$(x-6)^2 = -14$$

$$\sqrt{(x-6)^2} = \sqrt{-14}$$

$$x-6 = \pm\sqrt{-14}$$

$$x-6 = \pm i\sqrt{14}$$

$$x = 6 \pm i\sqrt{14}$$

$$\frac{8p^2}{8} - \frac{16p}{8} - \frac{10}{8} = \frac{0}{8}$$

$$p^2 - 2p - \frac{5}{4} = 0$$

$$p^2 - 2p = \frac{5}{4}$$

$$p^2 - 2p + 1 = \frac{5}{4} + 1$$

$$\frac{5}{4} + \frac{4}{4} = \frac{9}{4}$$

$$\sqrt{(p-1)^2} = \sqrt{\frac{9}{4}}$$

$$p-1 = \pm\sqrt{\frac{9}{4}}$$

$$p-1 = \pm\frac{3}{2}$$

$$p = 1 + \frac{3}{2} = \frac{5}{2}$$

$$p = 1 - \frac{3}{2} = -\frac{1}{2}$$

Examples from "Completing the Square" Worksheet

$$1.) \quad x^2 + 36x + \underline{324} = (x + 18)^2$$

\downarrow
 $\frac{36}{2} = 18$
 $18^2 = 324$

$$15.) \quad x^2 - 6x - 62 = 0$$

$$x^2 - 6x = 62$$

$$x^2 - 6x + 9 = 62 + 9$$

$$\sqrt{(x-3)^2} = \sqrt{71}$$

$$x - 3 = \pm \sqrt{71}$$

$$x = 3 \pm \sqrt{71}$$