

$$x^2 + 10x - 96 = 0$$

$$x^2 + px + q = 0$$

$$x^2 + 10x = 96$$

$$x^2 + px = -q$$

$$x^2 + 10x + 5^2 = 96 + 5^2$$

$$x^2 + px + \left(\frac{p}{2}\right)^2 = \left(\frac{p}{2}\right)^2 - q$$

$$(x + 5)^2 = 5^2 + 96$$

$$\left(x + \frac{p}{2}\right)^2 = \left(\frac{p}{2}\right)^2 - q$$

$$x + 5 = \pm \sqrt{5^2 + 96}$$

$$x + \frac{p}{2} = \pm \sqrt{\left(\frac{p}{2}\right)^2 - q}$$

$$x = -5 \pm \sqrt{5^2 + 96}$$

$$x = -\frac{p}{2} \pm \sqrt{\left(\frac{p}{2}\right)^2 - q}$$