

Alg2Trig
2.6 Number 29

$$2r^2 + 10r + 11 = 0$$

$$r^2 + 5r + \frac{11}{2} = 0 \quad \text{Divide through by 2}$$

$$r^2 + 5r = -\frac{11}{2} \quad \text{Rearrange for completing the square}$$

$$r^2 + 5r + \left(\frac{5}{2}\right)^2 = -\frac{11}{2} + \left(\frac{5}{2}\right)^2 \quad \text{Add the squared term to both sides}$$

$$\left(r + \frac{5}{2}\right)^2 = -\frac{11}{2} + \left(\frac{5}{2}\right)^2 \quad \text{Put in squared form}$$

Now solve

$$\left(r + \frac{5}{2}\right)^2 = -\frac{11}{2} + \frac{25}{4}$$

$$\left(r + \frac{5}{2}\right)^2 = -\frac{22}{4} + \frac{25}{4} = \frac{3}{4}$$

$$r + \frac{5}{2} = \pm\sqrt{\frac{3}{4}}$$

$$r + = \pm\sqrt{\frac{3}{4}} - \frac{5}{2} = \pm\frac{\sqrt{3}}{2} - \frac{5}{2} = \frac{-5 \pm \sqrt{3}}{2}$$