

Determine the roots of each quadratic equation by completing the square. Round your answer to the nearest hundredth. Check your answer.

87. $x^2 + 4x - 6 = 0$

$$x^2 + 4x + \underline{\quad} = 6 + \underline{\quad}$$

$$\left(\frac{4}{2}\right)^2 = 2^2 = 4$$

$$x^2 + 4x + 4 = 6 + 4$$

$$(x+2)^2 = 10$$

$$\sqrt{(x+2)^2} = \pm\sqrt{10}$$

$$x+2 = \pm\sqrt{10}$$

$$\frac{-2}{-2} \quad \frac{-2}{-2}$$

$$x = -2 \pm \sqrt{10}$$

88. $x^2 + 10x + 2 = 0$

$$x^2 + 10x + \underline{\quad} = -2$$

$$\left(\frac{10}{2}\right)^2 = 5^2 = 25$$

$$x^2 + 10x + 25 = -2 + 25 \quad x = -5 \pm \sqrt{23}$$

$$(x+5)^2 = 23$$

$$\sqrt{(x+5)^2} = \pm\sqrt{23}$$

$$x+5 = \pm\sqrt{23}$$

$$\frac{-5}{-5} \quad \frac{-5}{-5}$$

Determine the approximate zeros or roots of each function or equation using the Quadratic Formula. Round your answers to the nearest hundredth, if necessary.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

89. $f(x) = x^2 + 3x - 5$

$$a=1, b=3, c=-5$$

$$x = \frac{-3 \pm \sqrt{3^2 - 4(1)(-5)}}{2(1)}$$

$$x = \frac{-3 \pm \sqrt{9+20}}{2}$$

$$x = \frac{-3 \pm \sqrt{29}}{2}$$

90. $f(x) = -3x^2 - x + 7$

$$a=-3, b=-1, c=7$$

$$x = \frac{1 \pm \sqrt{(-1)^2 - 4(-3)(7)}}{2(-3)}$$

$$x = \frac{1 \pm \sqrt{1+84}}{-6}$$

$$x = \frac{1 \pm \sqrt{85}}{-6}$$