[11-05-16-T8]

Completing the square

■ **For each equation, solve for x by completing the square.**

[1] $2x^2 + 8x + 5 = 10$

[2] $3a^2 + 6a + 5 = 8$

[3] $2x^2 + 6x - 8 = 1$

[4] $5x^2 - 2x - 12 = 0$

[5] $6x^2 + 10x + 1 = 3$

[6] $2x^2 - 2x - 8 = -2$

[7] $3x^2 - 4x = 7$

[8] $4x^2 + x + 12 = 3$

Answers

[1] $x = \frac{1}{2}\left(-4 - \sqrt{26}\right)$ or $x = \frac{1}{2}\left(-4 + \sqrt{26}\right)$

[2] $a = -1 - \sqrt{2}$ or $a = -1 + \sqrt{2}$

[3] $x = \frac{3}{2}\left(-1 - \sqrt{3}\right)$ or $x = \frac{3}{2}\left(-1 + \sqrt{3}\right)$

[4] $x = \frac{1}{5}\left(1 - \sqrt{61}\right)$ or $x = \frac{1}{5}\left(1 + \sqrt{61}\right)$

[5] $x = \frac{1}{6}\left(-5 - \sqrt{37}\right)$ or $x = \frac{1}{6}\left(-5 + \sqrt{37}\right)$

[6] $x = \frac{1}{2}\left(1 - \sqrt{13}\right)$ or $x = \frac{1}{2}\left(1 + \sqrt{13}\right)$

[7] $x = -1$ or $x = \frac{7}{3}$

[8] No real number solutions