[10-03-24-T8]

Completing the square

■ **Solve the following equations for the unknown by completing the square.**

[1] $x^2 + \frac{5}{3}\,x = \frac{5}{36}$

[2] $x^2 - \frac{2}{5}\,x = \frac{3}{100}$

[3] $3\,x^2 + 5\,x = \frac{7}{12}$

[4] $5\,x^2 + 2\,x = \frac{33}{20}$

[5] $2\,x^2 - 3\,x = \frac{5}{18}$

[6] $4\,x^2 + 3\,x = 10$

[7] $5\,x^2 - 5\,x - 4 = 2$

[8] $2\,x^2 - 2\,x = 1$

[9] $x^2 + 6\,x = -10$

Answers

[1] $\left\{\left\{x \to \frac{1}{6}\left(-5-\sqrt{30}\right)\right\}, \left\{x \to \frac{1}{6}\left(\sqrt{30}-5\right)\right\}\right\}$

[2] $\left\{\left\{x \to \frac{1}{10}\left(2-\sqrt{7}\right)\right\}, \left\{x \to \frac{1}{10}\left(2+\sqrt{7}\right)\right\}\right\}$

[3] $\left\{\left\{x \to \frac{1}{6}\left(-5-4\sqrt{2}\right)\right\}, \left\{x \to \frac{1}{6}\left(4\sqrt{2}-5\right)\right\}\right\}$

[4] $\left\{\left\{x \to \frac{1}{10}\left(-2-\sqrt{37}\right)\right\}, \left\{x \to \frac{1}{10}\left(\sqrt{37}-2\right)\right\}\right\}$

[5] $\left\{\left\{x \to \frac{1}{12}\left(9-\sqrt{101}\right)\right\}, \left\{x \to \frac{1}{12}\left(9+\sqrt{101}\right)\right\}\right\}$

[6] $\left\{\{x \to -2\}, \left\{x \to \frac{5}{4}\right\}\right\}$

[7] $\left\{\left\{x \to \frac{1}{10}\left(5-\sqrt{145}\right)\right\}, \left\{x \to \frac{1}{10}\left(5+\sqrt{145}\right)\right\}\right\}$

[8] $\left\{\left\{x \to \frac{1}{2}\left(1-\sqrt{3}\right)\right\}, \left\{x \to \frac{1}{2}\left(1+\sqrt{3}\right)\right\}\right\}$

[9] $\emptyset$