

平方完成：レベル4【係数1以外の整数、軸が分数になる】

例題 次の計算をせよ。

(1) $y = 3x^2 + x + 7$

答

(2) $y = -2x^2 - 2x - 8$

答

練習 次の計算をせよ。

(1) $y = 2x^2 - 2x + 6$

答

(2) $y = 5x^2 + 3x - 1$

答

(3) $y = 4x^2 + 9x$

答

(4) $y = -3x^2 + 3x - 6$

答

(5) $y = -4x^2 - 6x + 4$

答

(6) $y = -x^2 + 7x + 1$

答

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例題 次の計算をせよ。

(1) $y = 3x^2 + x + 7$

$$\begin{aligned}
 y &= 3x^2 + x + 7 \\
 &= 3\left(x^2 + \frac{1}{3}x\right) + 7 \\
 &= 3\left\{\left(x + \frac{1}{6}\right)^2 - \frac{1}{36}\right\} + 7 \\
 &= 3\left(x + \frac{1}{6}\right)^2 - \frac{1}{12} + 7 = 3\left(x + \frac{1}{6}\right)^2 + \frac{83}{12}
 \end{aligned}$$

答 $y = 3\left(x + \frac{1}{6}\right)^2 + \frac{83}{12}$

(2) $y = -2x^2 - 2x - 8$

$$\begin{aligned}
 y &= -2x^2 - 2x - 8 \\
 &= -2\left(x^2 + x\right) - 8 \\
 &= -2\left\{\left(x + \frac{1}{2}\right)^2 - \frac{1}{4}\right\} - 8 \\
 &= -2\left(x + \frac{1}{2}\right)^2 + \frac{1}{2} - 8 = -2\left(x + \frac{1}{2}\right)^2 - \frac{15}{2}
 \end{aligned}$$

答 $y = -2\left(x + \frac{1}{2}\right)^2 - \frac{15}{2}$

練習 次の計算をせよ。

(1) $y = 2x^2 - 2x + 6$

答 $y = 2\left(x - \frac{1}{2}\right)^2 + \frac{11}{2}$

(2) $y = 5x^2 + 3x - 1$

答 $y = 5\left(x + \frac{3}{10}\right)^2 - \frac{29}{20}$

(3) $y = 4x^2 + 9x$

答 $y = 4\left(x + \frac{9}{8}\right)^2 - \frac{81}{16}$

(4) $y = -3x^2 + 3x - 6$

答 $y = -3\left(x - \frac{1}{2}\right)^2 - \frac{21}{4}$

(5) $y = -4x^2 - 6x + 4$

答 $y = -4\left(x + \frac{3}{4}\right)^2 + \frac{25}{4}$

(6) $y = -x^2 + 7x + 1$

答 $y = -\left(x - \frac{7}{2}\right)^2 + \frac{53}{4}$