

中3数学C 復習テスト解答 2学期-4

1.

(1) $x^2 + 11x + 7 = 0$

の2解が α, β なので、方程式の左辺は

$$x^2 + 11x + 7 = (x - \alpha)(x - \beta) \dots\dots\dots \star$$

と因数分解できる.

☆の両辺の係数を比較して,

$$\begin{cases} 11 = -\alpha - \beta \\ 7 = \alpha\beta \end{cases} \therefore \begin{cases} \alpha + \beta = \boxed{-11} \\ \alpha\beta = \boxed{7} \end{cases}$$

(2) $2x^2 + 11x + 7 = 0$

$$\therefore x^2 + \frac{11}{2}x + \frac{7}{2} = 0$$

の2解が α, β なので、方程式の左辺は

$$x^2 + \frac{11}{2}x + \frac{7}{2} = (x - \alpha)(x - \beta) \dots\dots\dots \star$$

と因数分解できる.

☆の両辺の係数を比較して,

$$\begin{cases} \frac{11}{2} = -\alpha - \beta \\ \frac{7}{2} = \alpha\beta \end{cases} \therefore \begin{cases} \alpha + \beta = \boxed{-\frac{11}{2}} \\ \alpha\beta = \boxed{\frac{7}{2}} \end{cases}$$

2.

(1) $x^3 - 6x^2 + 8x + 2 = 0$

の3解が α, β, γ なので、方程式の左辺は

$$x^3 - 6x^2 + 8x + 2 = (x - \alpha)(x - \beta)(x - \gamma) \dots\dots\dots \star$$

と因数分解できる.

☆の両辺の係数を比較して,

$$\begin{cases} -6 = -\alpha - \beta - \gamma \\ 8 = \alpha\beta + \alpha\gamma + \beta\gamma \\ 2 = -\alpha\beta\gamma \end{cases} \therefore \begin{cases} \alpha + \beta + \gamma = \boxed{6} \\ \alpha\beta + \alpha\gamma + \beta\gamma = \boxed{8} \\ \alpha\beta\gamma = \boxed{-2} \end{cases}$$

また,

$$\frac{1}{\alpha} + \frac{1}{\beta} + \frac{1}{\gamma} = \frac{\beta\gamma + \alpha\gamma + \alpha\beta}{\alpha\beta\gamma} = \frac{8}{-2} = \boxed{-4}$$

(2) $2x^3 + 8x^2 - 6x + 1 = 0$

$$\therefore x^3 + 4x^2 - 3x + \frac{1}{2} = 0$$

の3解が α, β, γ なので、方程式の左辺は

$$x^3 + 4x^2 - 3x + \frac{1}{2} = (x - \alpha)(x - \beta)(x - \gamma) \dots\dots\dots \star$$

と因数分解できる.

☆の両辺の係数を比較して,

$$\begin{cases} 4 = -\alpha - \beta - \gamma \\ -3 = \alpha\beta + \alpha\gamma + \beta\gamma \\ \frac{1}{2} = -\alpha\beta\gamma \end{cases} \therefore \begin{cases} \alpha + \beta + \gamma = \boxed{-4} \\ \alpha\beta + \alpha\gamma + \beta\gamma = \boxed{-3} \\ \alpha\beta\gamma = \boxed{-\frac{1}{2}} \end{cases}$$

また,

$$\frac{1}{\alpha} + \frac{1}{\beta} + \frac{1}{\gamma} = \frac{\beta\gamma + \alpha\gamma + \alpha\beta}{\alpha\beta\gamma} = \frac{-3}{-\frac{1}{2}} = \boxed{6}$$