

第4回 答え

Ⅱ。 $f(0) = -3, f(-1) = -5, f(2) = -5,$

$$f(a+2) = -(a+2)^2 + (a+2) - 3$$

$$= -a^2 - 3a - 5 //$$

Ⅲ。 (1) $y = 10x \quad (0 < x)$

(2) $y = (5-x)x \quad (0 < x < 5)$

(3) $y = \frac{10}{x} \quad (0 < x)$

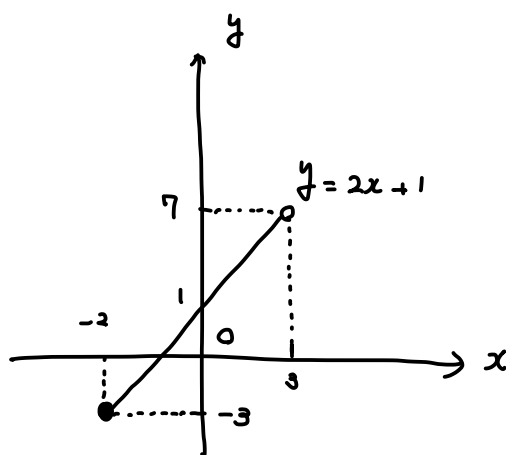
(4) y は x の func. じゃない。

← 以下, 関数を func. と略す。

Ⅳ。 (1) 第4象限

(2) 第3象限

4。



値域は $-3 \leq y < 7$

5. (1) Max : 6

Min : なし

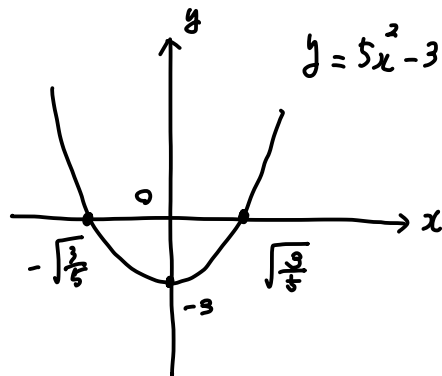
← 以下, 最大値を Max, 最小値を Min

と略す。

(2) Max : なし

Min : -2

6. (1)

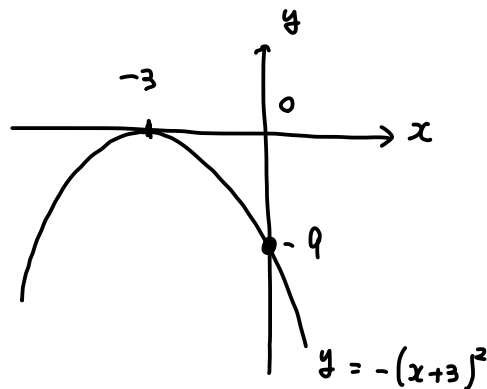


Ax.: y 軸

P.P.: $(0, -3)$

↑
以下, 軸を Ax. 頂点を P.P. と略す。

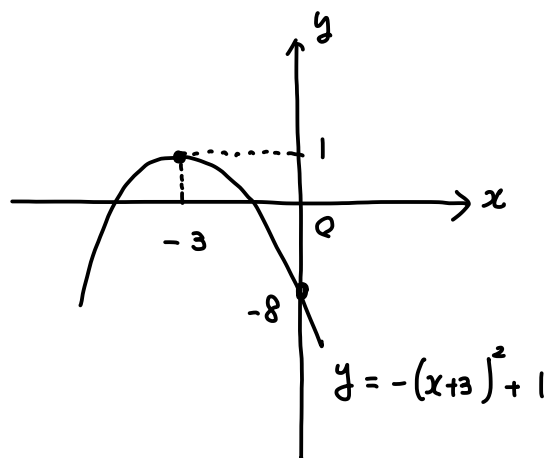
(2)



Ax.: $x = -3$

P.P.: $(-3, 0)$

(3)



Ax : $x = -3$

P.P. : $(-3, 1)$

$$V_0 \quad (1) \quad 2x^2 - 8x + 1$$

$$= 2(x-2)^2 - 7 \quad "$$

$$(2) \quad \frac{1}{2}x^2 - x + 3$$

$$= \frac{1}{2}(x-1)^2 + \frac{5}{2} \quad "$$

$$(3) \quad x^2 + 3x - 2$$

$$= \left(x + \frac{3}{2}\right)^2 - \frac{9}{4} - \frac{8}{4}$$

$$= \left(x + \frac{3}{2}\right)^2 - \frac{17}{4} \quad "$$

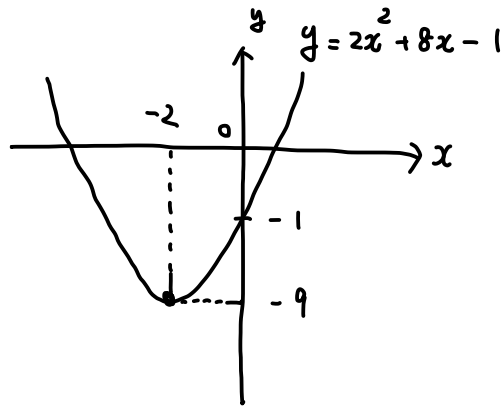
$$(4) \quad -2x^2 + 6x - 1$$

$$= -2\left(x - \frac{3}{2}\right)^2 + \frac{9}{2} - \frac{2}{2}$$

$$= -2\left(x - \frac{3}{2}\right)^2 + \frac{7}{2} \quad "$$

8. (1) $y = 2x^2 + 8x - 1$

$$= 2(x+2)^2 - 9$$

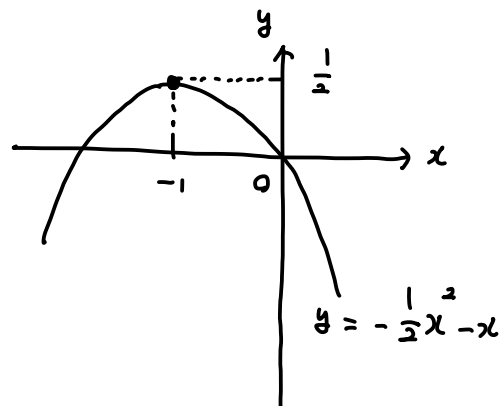


Ax.: $x = -2$

P.P.: $(-2, -9)$

(2) $y = -\frac{1}{2}x^2 - x$

$$= -\frac{1}{2}(x+1)^2 + \frac{1}{2}$$



Ax.: $x = -1$

P.P.: $(-1, \frac{1}{2})$

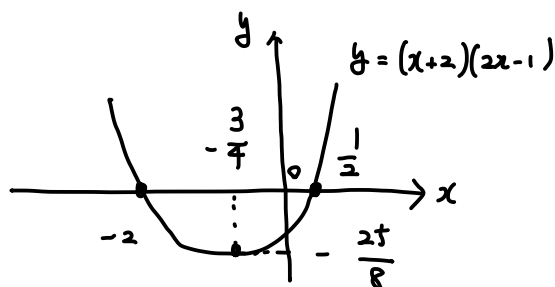
(3) $y = (x+2)(2x-1)$

$$= 2x^2 + 3x - 2$$

$$= 2(x + \frac{3}{4})^2 - \frac{9}{8} - 2$$

Ax.: $x = -\frac{3}{4}$

P.P.: $(-\frac{3}{4}, -\frac{25}{8})$



9. (1) $(5, 2), (1, 8)$

(2) $(-1, -7), (-5, -1)$

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

(2) i x 軸方向 $1: +1$, y 軸方向 $1: +2$

ii. $y = 3x^2 + x - 1$

$$= 3\left(x + \frac{1}{6}\right)^2 - \frac{13}{12}$$

x 軸方向 $1: +\frac{1}{6}$,

y 軸方向 $1: +\frac{13}{12}$ //

$$= -\frac{1}{12} - \frac{13}{12}$$

11. x 軸: $(4, 3)$, y 軸: $(-4, -3)$, 原点: $(-4, 3)$

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

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

Max: 无

Min: 2 //

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

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

Max: 7

Min: 无 //

$$13. (1) y = -x^2 + 4x - 2 \quad (0 \leq x \leq 4)$$

$$= -(x-2)^2 + 2 \quad (\quad \text{''} \quad)$$

$$\text{Max} : 2$$

$$\text{Min} : -2 \quad \text{''}$$

$$(2) y = -3x^2 + 6x - 5 \quad (-1 \leq x \leq 2)$$

$$= -3(x-1)^2 - 2 \quad (\quad \text{''} \quad)$$

$$\text{Max} : -2$$

$$\text{Min} : -14 \quad \text{''}$$

$$14. (1) y = -2x^2 - 4x + 1 \quad (-2 \leq x < 1)$$

$$= -2(x+1)^2 + 3 \quad (\quad \text{''} \quad)$$

$$\text{Max} : 3$$

$$\text{Min} : -7 \quad \text{''}$$

$$(2) y = x^2 - 2x + 2 \quad (-1 < x < 2)$$

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

$$\text{Max} : 2$$

$$\text{Min} : 1 \quad \text{''}$$

$$\text{II 5. (1) } y = x^2 - 4x + a \quad (1 \leq x \leq 5)$$

$$= (x-2)^2 + a - 4 \quad (\text{ " })$$

$$\therefore 6 = 25 - 20 + a$$

$$a = 1 \quad ,$$

$$(2) \quad y = x^2 - 4x$$

$$= (x-2)^2 - 4$$

$$y = -x^2 - 4x + a$$

$$= -(x+2)^2 + a + 4$$

$$\therefore a = -8 \quad ,$$

$$\text{II 6. } \begin{cases} 1 = -3 + a + b \\ -8 = -12 + 2a + b \end{cases}$$

$$\begin{cases} a + b = 4 \\ 2a + b = 4 \end{cases}$$

$$\begin{cases} a + b = 4 \\ a = 0 \end{cases}$$

$$\begin{cases} b = 4 \\ a = 0 \end{cases} \quad ,$$

17. 0 でない実数 a に対して

$$y = a(x-2)^2 - 4$$

が点 $(0, 4)$ を通るので

$$4 = 4a - 4$$

$$a = 2$$

$$\therefore y = 2(x-2)^2 - 4 //$$

18. (1) 0 でない実数 a に対して,

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

が点 $(1, 7)$ を通るので,

$$7 = 4a + 3$$

$$a = 1$$

$$\therefore y = (x+1)^2 + 3 //$$

118. (2) 0でない実数 a , 実数 h に対して,

$$y = a(x+2)^2 + h$$

が2点 $(0, 3)$, $(-1, 0)$ を通るので,

$$\begin{cases} 0 = a + h \\ 3 = 4a + h \end{cases}$$

$$\begin{cases} 0 = a + h \\ 3 = 3a \end{cases}$$

$$\begin{cases} a = 1 \\ h = -1 \end{cases}$$

$$\therefore y = (x+2)^2 - 1 //$$

II 9.

$$\begin{cases} a - b + 3c = 1 \\ 3a + 7b - c = 8 \\ 2a - 4b + 5c = -2 \end{cases}$$

$$-\frac{3}{2} + \frac{21}{2} - 1 = +\frac{18}{2} - 1 = 9 - 1 = 8$$

ok!

$$-1 - 6 + 5 = -2 \text{ ok!}$$

$$\begin{cases} a - b + 3c = 1 \\ 10b - 10c = 5 \\ -2b - c = -4 \end{cases}$$

$$\begin{cases} a - b + 3c = 1 \\ 2b - 2c = 1 \\ -3c = -3 \end{cases}$$

$$\begin{cases} a - \frac{3}{2} + 3 = 1 \\ b = \frac{3}{2} \\ c = 1 \end{cases}$$

$$-\frac{3}{2} + 3 = \frac{3}{2}$$

$$1 - \frac{3}{2} = -\frac{1}{2}$$

$$\begin{cases} a = -\frac{1}{2} \\ b = \frac{3}{2} \\ c = 1 \end{cases}$$

20. 実数 a, b, c (ただし $a \neq 0$) に対して,

$$\begin{cases} 1 = a - b + c \\ -5 = a + b + c \\ 5 = 9a + 3b + c \end{cases}$$

$$1 = 2 + 3 - 4 \quad \text{ok!}$$

$$\begin{cases} 1 = a - b + c \\ -6 = 2b \\ \cancel{1} = \cancel{8}a + \cancel{4}b \end{cases}$$

$$\begin{cases} 1 = a + 3 + c \\ b = -3 \\ 1 = 2a - 3 \end{cases}$$

$$\begin{cases} c = -4 \\ b = -3 \\ a = 2 \end{cases}$$

$$\therefore y = 2x^2 - 3x - 4 //$$

$$21. (1) x = \pm 3$$

$$(2) 5x^2 - 7x - 6 = 0$$

$$(5x+3)(x-2) = 0$$

$$\therefore x = -\frac{3}{5}, 2 //$$

$$(3) (x-2)^2 - 3 = 0$$

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

$$x = 2 \pm \sqrt{3} //$$

$$(4) x^2 - 5x + 3 = 0$$

$$x = \frac{5 \pm \sqrt{13}}{2} //$$

$$(5) -5x^2 + 4x + 2 = 0$$

$$x = \frac{-2 \pm \sqrt{14}}{-5} //$$

$$(6) 2x^2 + 4\sqrt{5}x + 10 = 0$$

$$x = \frac{-2\sqrt{5} \pm \sqrt{20-20}}{2}$$

$$= -\sqrt{5} //$$

$$\text{Ex. (7) } \sqrt{3}x^2 - 4x - 2 = 0$$

$$x = \frac{2 \pm \sqrt{4+2\sqrt{3}}}{\sqrt{3}}$$

$$(\sqrt{a} + \sqrt{b})^2 = a + b + 2\sqrt{ab}$$

$$= \frac{2 \pm (1 + \sqrt{3})}{\sqrt{3}} \quad "$$

$$(8) \quad 2(x+1)^2 = (x+2)(x+3)$$

$$x^2 - x + 4 = 0$$

$$x = \frac{1 \pm \sqrt{17}}{2} \quad "$$

$$(9) \quad 2(x+2)^2 - (x+2) - 3 = 0$$

$$\{2(x+2) - 3\} \{(x+2) + 1\} = 0$$

$$(2x+1)(x+3) = 0$$

$$\therefore x = -3, -\frac{1}{2} \quad "$$

$$(10) \quad 0.2x^2 - 0.5x - 1.2 = 0$$

$$2x^2 - 5x - 12 = 0$$

$$(2x+3)(x-4) = 0$$

$$x = -\frac{3}{2}, 4 \quad "$$

23。以下, 判別式を D とする。

$$(1) D = 25 - 4 > 0$$

$$\therefore 2 \text{ 個 } "$$

$$(2) D = 9 - 20 < 0$$

$$\therefore \text{解なし} "$$

$$(3) D = 36 - 36 = 0$$

$$\therefore 1 \text{ 個 } "$$

24。 $36 - 4(2a-1) > 0$

$$9 - (2a-1) > 0$$

$$-2a + 10 > 0$$

$$a - 5 < 0$$

$$a < 5 \quad "$$

$$25. (k-1)^2 - 16 = 0$$

$$k-1 = \pm 4$$

$$k = -3, 5$$

$$k = -3 \quad z''$$

$$4x^2 - 4x + 1 = 0$$

$$(2x-1)^2 = 0$$

$$x = \frac{1}{2}$$

$$k = 5 \quad z''$$

$$4x^2 + 4x + 1 = 0$$

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

$$x = -\frac{1}{2}$$

$$\therefore k = -3 \quad z'' \quad x = \frac{1}{2}, \quad k = 5 \quad z'' \quad x = -\frac{1}{2} //$$

26. 整数 $n \in \mathbb{Z}$,

$$(n-1)^2 + n^2 + (n+1)^2 = 177$$

$$3n^2 = 177$$

$$n = \pm 5$$

よって、

4, 5, 6 //

27. (1) $(-1, 0), (5, 0)$ //

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

$$x = \frac{-5 \pm \sqrt{25-8}}{-4}$$

$$\therefore \left(\frac{5-\sqrt{17}}{4}, 0 \right), \left(\frac{5+\sqrt{17}}{4}, 0 \right) //$$

$$= \frac{5 \pm \sqrt{17}}{4}$$

$$(3) y = 4x^2 - 20x + 25$$

$$x = \frac{10 \pm \sqrt{100-100}}{4}$$

$$= 4 \left(x - \frac{5}{2} \right)^2$$

$$\therefore \left(\frac{5}{2}, 0 \right) //$$

$$28. (1) D = 4 - 4 = 0$$

$$\therefore 1 \text{ 点}$$

$$(2) D = 1 + 4 \cdot 12 > 0$$

$$\therefore 2 \text{ 点}$$

$$(3) D = 4 - 12 < 0$$

$$\therefore \text{共有点はない}$$

$$29. 9 - 8(-2k+1) \geq 0$$

$$16k+1 \geq 0$$

$$\therefore k \geq -\frac{1}{16} //$$

$$30. m^2 - 4(m+3) = 0$$

$$m^2 - 4m - 12 = 0$$

$$(m-6)(m+2) = 0$$

$$m = -2 \text{ のとき,}$$

$$y = x^2 - 2x + 1$$

$$x = 1$$

$$m = 6 \text{ のとき,}$$

$$y = x^2 + 6x + 9$$

$$x = -3$$

$$\therefore m = -2 \text{ のとき } (1, 0)$$

$$m = 6 \text{ のとき } (-3, 0) //$$

$$\text{BII. (1) } 2x - 5 \leq 0$$

$$x \leq \frac{5}{2} \quad //$$

$$(2) \quad (x+1)(x-2) > 0$$

$$x < -1, \quad 2 < x \quad //$$

$$(3) \quad (2x+3)(3x-4) \leq 0$$

$$-\frac{3}{2} \leq x \leq \frac{4}{3} \quad //$$

$$(4) \quad x^2 - 4 < 0$$

$$-2 < x < 2 \quad //$$

$$(5) \quad x^2 - 3x + 2 > 0$$

$$(x-1)(x-2) > 0$$

$$x < 1, \quad 2 < x \quad //$$

$$(6) \quad 2x^2 + 9x + 9 \geq 0$$

$$(2x+3)(x+3) \geq 0$$

$$x \leq -3, \quad -\frac{3}{2} \leq x \quad //$$

$$\text{BII. (7) } 3x^2 - \sqrt{7}x - 1 \geq 0$$

$$x = \frac{\sqrt{7} \pm \sqrt{7+12}}{6}$$

$$x \leq \frac{\sqrt{7} - \sqrt{19}}{6}, \frac{\sqrt{7} + \sqrt{19}}{6} \leq x //$$

$$(8) \quad x^2 + x \leq 3x + 24$$

$$x^2 - 2x - 24 \leq 0$$

$$(x-6)(x+4) \leq 0$$

$$-4 \leq x \leq 6 //$$

$$(9) \quad (x-4)^2 > 0$$

4以外のすべての実数 //

$$(10) \quad \text{すべての実数} //$$

$$(11) \quad \text{実数解なし} //$$

$$(12) \quad x = 4 //$$

$$(13) \quad 9x^2 + 1 \leq 0$$

$$9x^2 - 6x + 1 \leq 0$$

$$9\left(x - \frac{1}{3}\right)^2 \leq 0$$

$$x = \frac{1}{3} //$$

$$\text{BII. (14) } x^2 - 2x + 5 \leq 0$$

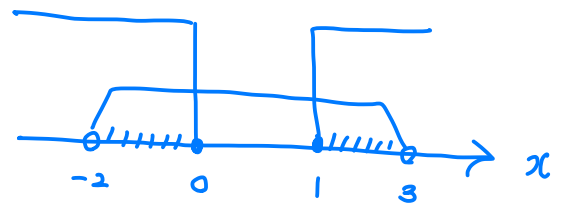
$$(x-1)^2 + 4 \leq 0$$

$\therefore$ 実数解なし //

$$(15) \begin{cases} x^2 - x - 6 < 0 \\ x^2 - x \geq 0 \end{cases}$$

$$\begin{cases} (x+2)(x-3) < 0 \\ x(x-1) \geq 0 \end{cases}$$

$$\begin{cases} -2 < x < 3 \\ x \leq 0, 1 \leq x \end{cases}$$



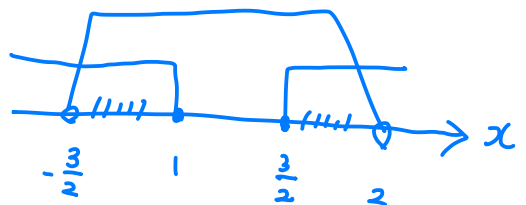
$\therefore -2 < x \leq 0, 1 \leq x < 3 //$

$$\text{BII. (16)} \quad \begin{cases} 5x-3 \leq 2x^2 \\ 2x^2 < x+6 \end{cases}$$

$$\begin{cases} 2x^2 - 5x + 3 \geq 0 \\ 2x^2 - x - 6 < 0 \end{cases}$$

$$\begin{cases} (2x-3)(x-1) \geq 0 \\ (2x+3)(x-2) < 0 \end{cases}$$

$$\begin{cases} x \leq 1, \frac{3}{2} \leq x \\ -\frac{3}{2} < x < 2 \end{cases}$$



$$\therefore -\frac{3}{2} < x \leq 1, \frac{3}{2} \leq x < 2 //$$

BII. 求める長さは x cm である。

$$\begin{cases} 24 \leq x(10-x) \\ 0 < x \leq 5 \end{cases}$$

$$\begin{cases} x^2 - 10x + 24 \leq 0 \\ 0 < x \leq 5 \end{cases}$$

$$\begin{cases} (x-4)(x-6) \leq 0 \\ 0 < x \leq 5 \end{cases}$$

$$\therefore 4 \leq x \leq 5$$

4cm 以上 5cm 以下 //

$$\text{BB}_0 \quad \begin{cases} x - 2y = 1 \\ x - y = 4 \end{cases}$$

$$\begin{cases} -y = -3 \\ x - y = 4 \end{cases}$$

$$\begin{cases} y = 3 \\ x = 7 \end{cases} //$$

$$\text{B4}_0 \quad (1) \quad 1$$

$$(2) \quad -1 + 7i$$

$$(3) \quad 5 - 12i$$

$$\text{B5}_0 \quad (1) \quad 5 - 3i$$

$$(2) \quad -2i$$

$$\text{B6}_0 \quad \frac{3+i}{3-i} = \frac{(3+i)^2}{9+1} = \frac{8+6i}{10} = \frac{4+3i}{5} //$$

$$\text{BT. (1) } x = \frac{-3 \pm \sqrt{9-40}}{2}$$

$$x = \frac{-3 \pm \sqrt{31}i}{2} //$$

$$\begin{aligned} (2) \quad x &= 2 \pm \sqrt{4-8} \\ &= 2 \pm 2i // \end{aligned}$$

$$(3) \quad x-1 = \frac{-1 \pm \sqrt{1-2}}{2}$$

$$\begin{aligned} x &= 1 + \frac{-1 \pm i}{2} \\ &= \frac{1 \pm i}{2} // \end{aligned}$$

$$(4) \quad \frac{x^2+1}{2} = \frac{x-1}{3}$$

$$3x^2+3 = 2x-2$$

$$3x^2-2x+5 = 0$$

$$x = \frac{1 \pm \sqrt{1-15}}{3}$$

$$= \frac{1 \pm \sqrt{14}i}{3} //$$

$$38. \quad D = 9 + 4 > 0$$

$\therefore$ 異なる2つの実数解をもつ //

$$39. \quad D = a^2 - 2(-a^2 + 3)$$

$$= 3a^2 - 6$$

$$= a^2 - 2$$

$a < -\sqrt{2}, \sqrt{2} < a$ で異なる2つの実数解

$a = \pm\sqrt{2}$ で重解

$-\sqrt{2} < a < \sqrt{2}$ で異なる2つの虚数解 //

$$40. \quad (m-1)^2 - 16 = 0$$

$$\therefore m = 1 \pm 4$$

$m = -3$ のとき,

$$4x^2 - 4x + 1 = 0$$

$$(2x-1)^2 = 0$$

$$\therefore x = \frac{1}{2},$$

$m = 5$ のとき,

$$4x^2 + 4x + 1 = 0$$

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

$$\therefore x = -\frac{1}{2}$$

$$\therefore m = -3 \text{ のとき } x = \frac{1}{2}, m = 5 \text{ のとき } x = -\frac{1}{2} //$$

$$41. x^2 - x - m(x+1) + 7 = 0$$

$$x^2 - (m+1)x + 7 - m = 0$$

$$(m+1)^2 - 4(7-m) < 0$$

$$m^2 + 6m - 27 < 0$$

$$(m+9)(m-3) < 0$$

$$-9 < m < 3 \quad //$$

$$42. (1) \text{ 和: } -3, \text{ 積: } 2$$

$$(2) \text{ 和: } -\frac{3}{4}, \text{ 積: } -\frac{9}{4}$$

$$(3) \text{ 和: } -\frac{4}{3}, \text{ 積: } \frac{5}{9}$$

$$43. \alpha + \beta = 1, \alpha\beta = \frac{1}{2}$$

$$(1) \alpha^2\beta + \alpha\beta^2$$

$$= \alpha\beta(\alpha + \beta)$$

$$= \frac{1}{2} //$$

$$443. (2) (\alpha - \beta)^2 = (\alpha + \beta)^2 - 4\alpha\beta$$

$$= -1 //$$

$$(3) (1 + \alpha)(1 + \beta)$$

$$= 1 + \alpha + \beta + \alpha\beta$$

$$= 1 + 1 + \frac{1}{2}$$

$$= \frac{5}{2} //$$

444. 2つの解は 2α と 3β である。

$$\begin{cases} 5\alpha = 10 \\ 6\alpha^2 = m \end{cases}$$

$$\begin{cases} \alpha = 2 \\ m = 24 \end{cases}$$

$\therefore$ 2つの解は $4, 6, m = 24 //$

$$445. x^2 + 2x + 5$$

$$= (x + 1 - 2i)(x + 1 + 2i) //$$

$$x = -1 \pm \sqrt{1 - 5}$$

$$= -1 \pm 2i$$

$$46. \quad (1) \quad \frac{3}{2} - \frac{2}{3} = \frac{1}{6}(9-4) = \frac{5}{6}$$

$$\frac{3}{2} \cdot \left(-\frac{2}{3}\right) = -1$$

$$\therefore 6x^2 - 5x - 6 = 0 //$$

$$(2) \quad x^2 - 4x + 13 = 0$$

$$47. \quad (1) \quad x^2 - 5x - 14 = 0$$

$$(x-7)(x+2) = 0$$

$$x = 7, -2 \quad \therefore 7 \text{ \& } -2 //$$

$$(2) \quad x^2 - 4x - 1 = 0$$

$$x = 2 \pm \sqrt{4+1}$$

$$\therefore 2-\sqrt{5} \text{ \& } 2+\sqrt{5} //$$

$$48. (1) \quad x^3 - x^2 - 7x - 6$$

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

$$\therefore -1 //$$

$$(2) \quad 2x^3 - x^2 - 2x + 1$$

$$= (2x-1)(x^2-1)$$

$$\therefore 0 //$$

$$49. \quad f(x) = x^3 - 6x^2 + 11x - 6$$

$$\text{check, } f(1) = 0 \quad \square$$

$$x^3,$$

$$x^3 - 6x^2 + 11x - 6 = (x-1)(x^2 - 5x + 6)$$

$$= (x-1)(x-2)(x-3) //$$

$$50. (1) x^3 - 2x^2 - x + 2$$

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

$$= (x+1)(x-2)(x-1) //$$

$$|-2-1+2 \\ \text{ok!}$$

$$(2) 2x^3 + 9x^2 + 13x + 6$$

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

$$= (x+1)(2x+3)(x+2) //$$

$$-16+36-26+6 \\ = 20-20 \\ = 0 \text{ ok!}$$

$$51. f(x) = 6x^3 + ax^2 - 3x - 9$$

цїз.

$$f(-\frac{3}{2}) = 0$$

$$- \frac{6 \cdot 3^3}{2^{\cancel{3}2}} + a \frac{9}{4} + \frac{9}{2} - 9 = 0$$

$$- 3^{\cancel{3}2} + \cancel{9}a + \cancel{18} - \cancel{36} = 0$$

$$a - 9 + 2 - 4 = 0$$

$$\therefore a = 11 //$$

$$\text{Ex. (1) } x^3 + 7x^2 + 10x = 0$$

$$x(x^2 + 7x + 10) = 0$$

$$x(x+2)(x+5) = 0$$

$$\therefore x = -5, -2, 0 //$$

$$(2) x^3 = -8$$

$$x = -2, \pm \sqrt{3}i //$$

$$(3) x^4 - 5x^2 - 36 = 0$$

$$(x^2 - 9)(x^2 + 4) = 0$$

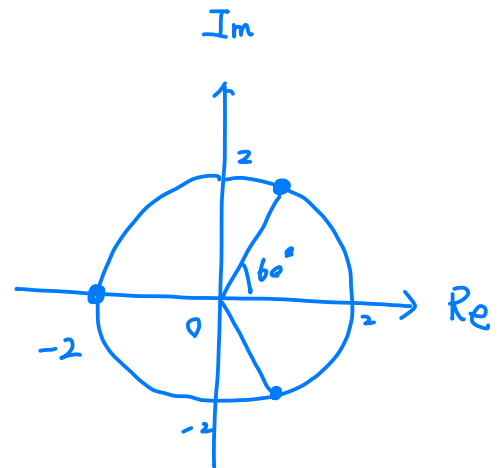
$$\therefore x = \pm 3, \pm 2i //$$

$$(4) x^3 - 7x + 6 = 0$$

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

$$(x-1)(x-2)(x+3) = 0$$

$$\therefore x = -3, 1, 2 //$$



$$8 - 14 + 6 = 0$$

OK!

$$52. (5) x^4 + x^3 - 2x^2 - 4x - 8 = 0$$

$$16 + 8 - 8 - 8 - 8 = 0$$

$$(x-2)(x^3 + 3x^2 + 4x + 4) = 0$$

$$-8 + 12 - 8 + 4 = 0$$

$$(x-2)(x+2)(x^2 + x + 2) = 0$$

$$\frac{-1 \pm \sqrt{1-8}}{2}$$

$$\therefore x = \pm 2, \frac{-1 \pm \sqrt{7}i}{2} //$$

$$16 - 8 - 8 + 8 - 8 = 0$$

$$53. -1 - a + 2 = 0$$

$$a = 1 //$$

54. 恒等式:

$$2x^3 + ax^2 + 3x + b$$

$$= (x^2 - 5x + 6)(2x + \frac{9}{5})$$

が成り立つばよい。

$$\therefore a = -10 + \frac{9}{5} = -\frac{41}{5}$$

$$b = \frac{54}{5}$$

$$\therefore \text{よって、} a = -\frac{41}{5}, b = \frac{54}{5}, \text{他の解は } -\frac{9}{10} //$$