

Ex 1.10

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

$$2) x^2 + 5x + 4 = (x+1)(x+4)$$

$$3) u^2 - 6u + 8 = (u-2)(u-4)$$

$$4) x^2 - 2x - 35 = (x-7)(x+5)$$

$$5) 9x^2 + 6x + 1 = (3x+1)^2$$

$$6) 4z^2 + 5z + 1 = \overbrace{4\left(x+\frac{1}{4}\right)(x+1)}$$

$$7) x^2 - 2x - 80 = \overbrace{(4x+1)(x+1)}$$

$$8) 3y^2 + 7y + 3$$

$$\Delta = 49 - 36 = 13 > 0$$

$$y_{1,2} = \frac{-7 \pm \sqrt{13}}{6} \begin{cases} \frac{-7 + \sqrt{13}}{6} \\ \frac{-7 - \sqrt{13}}{6} \end{cases}$$

$$\Rightarrow 3 \left(y - \frac{-7 + \sqrt{13}}{6} \right) \left(y - \frac{-7 - \sqrt{13}}{6} \right)$$

$$1) \begin{cases} S: 5 = 2+3 \\ P: 6 = 2 \cdot 3 \end{cases}$$

$$2) \begin{cases} S: 5 = 4+1 \\ P: 4 = 4 \cdot 1 \end{cases}$$

$$3) \begin{cases} S: -6 = -2 + (-4) \\ P: 8 = (-2)(-4) \end{cases}$$

$$4) \begin{cases} S: -2 = -7 + 5 \\ P: -35 = (-7) \cdot 5 \end{cases}$$

$$(\Delta = 0)$$

$$\Delta = 25 - 16 = 9$$
$$z_{1,2} = \frac{-5 \pm 3}{8} = \begin{cases} + \frac{-2}{8} = -\frac{1}{4} \\ - \frac{-8}{8} = -1 \end{cases}$$

$$9) \quad 6x^2 + 5x + 1 = \frac{6}{3 \cdot 2} \left(x + \frac{1}{3}\right) \left(x + \frac{1}{2}\right) = \underline{(3x+1)(2x+1)}$$

$$\Delta = 25 - 24 = 1$$

$$x_{1,2} = \frac{-5 \pm 1}{12} = \begin{cases} + \frac{-4}{12} = -\frac{1}{3} \\ - \frac{-6}{12} = -\frac{1}{2} \end{cases}$$

$$13) \quad 40x^2 + 3x - 28 = \frac{40}{5 \cdot 8} \left(x - \frac{4}{5}\right) \left(x + \frac{7}{8}\right) = \underline{(5x-4)(8x+7)}$$

$$\Delta = 9 - 4 \cdot 40 \cdot (-28) = 4489 = 67^2$$

$$x_{1,2} = \frac{-3 \pm 67}{80} = \begin{cases} + \frac{64}{80} = \frac{4}{5} \\ - \frac{-70}{80} = -\frac{7}{8} \end{cases}$$

$$16) \quad 4m^2 + 25m - 21 = 4 \left(m - \frac{3}{4}\right) (m+7) = \underline{(4m-3)(m+7)}$$

$$\Delta = 25^2 - 4 \cdot 4 \cdot (-21) = 961 = 31^2$$

$$m_{1,2} = \frac{-25 \pm 31}{8} = \begin{cases} + \frac{6}{8} = \frac{3}{4} \\ - \frac{-56}{8} = -7 \end{cases}$$