

(1)

$$g = -2r + 6r + 1$$

$$g_s = \frac{-\Delta}{\epsilon a} = 1 \rightarrow \frac{-6r - 12}{-1} = 1 \rightarrow 6r + 12 = 1 \rightarrow 6r = -11 \rightarrow r = -\frac{11}{6}$$

الف) $f(m) = m^2 + kmr + 1$ $\Delta = 6r - \epsilon a c = 1 - 12 = -11 \rightarrow$ (2)

ب) $f(m) = (1 - 2r)^2 - 2(1 - 2r) - 10 \xrightarrow{\epsilon - m^2 + 1} 1 - 2 + 10 = 0 \rightarrow$ (3)

$$\begin{cases} + = 2 \rightarrow 1 - 2r = 2 \\ - = -2 \rightarrow 1 - 2r = -2 \end{cases}$$

$$2r = -1 \rightarrow r = -\frac{1}{2}$$

$$2r = 3 \rightarrow r = \frac{3}{2}$$

$$fmr - 19m + m = 0$$

$$S = \alpha + \alpha + r = \frac{-b}{a} \rightarrow 2\alpha + r = \frac{19}{1} = 19 \rightarrow 2\alpha = 18 \rightarrow \alpha = 9 \rightarrow \alpha + r = 10$$

$$P = \frac{c}{a} = \frac{m}{1} = 1 \rightarrow m = 1$$

$$fmr - 9m + m - 1 = 0$$

$$2\alpha - \beta = 1 \rightarrow \beta = 2\alpha - 1 \quad \alpha + \beta = \frac{-b}{a} \rightarrow \alpha + 2\alpha - 1 = 10 \rightarrow 3\alpha = 11 \rightarrow \alpha = \frac{11}{3}$$

$$P\alpha = 9 \rightarrow \alpha = 9, \beta = 0$$

$$P = \frac{c}{a} = \frac{m-1}{1} = 0 \rightarrow m-1 = 0 \rightarrow m = 1$$

$$-m^2 + fm + m^2 - 1 = 0$$

$$\beta = \frac{1}{\alpha} \rightarrow P = \alpha \times \frac{1}{\alpha} = 1 \quad \frac{c}{a} = \frac{m^2 - 1}{-m} = 1 \rightarrow m^2 + m - 1 = 0$$

$$m = 1, -2$$

$$\left\{ \begin{array}{l} m = 1 \rightarrow -m^2 + fm - 1 = 0 \quad \Delta = 6r - \epsilon a c = 19 + 1 = 20 > 0 \\ m = -2 \rightarrow -m^2 + fm + 1 = 0 \quad \Delta = 14 - 14 = 0 \rightarrow \text{discriminant} \end{array} \right\} \rightarrow m = 1$$

$$m^2 - mm + 1 = 0$$

$$\alpha\beta = 1 \rightarrow \alpha\beta \times \beta = 1 \quad \beta = \frac{1}{\alpha} \text{ and } \alpha = \frac{1}{\beta}$$

$$P = \alpha\beta = \frac{c}{a} = 1$$

$$S = \alpha + \beta = \frac{1}{\alpha} + \frac{1}{\beta} = \frac{19 + 21}{12} = \frac{40}{12} = \frac{10}{3} = m$$

(4)

$$n^r - r m + m = 0 \quad \beta = r \alpha$$

$$5 = \alpha + \beta = \alpha + r \alpha = r \alpha = \frac{-b}{a} = r \rightarrow \alpha = 1, \beta = r$$

$$p = \alpha \beta = \frac{c}{a} \rightarrow r = \frac{m}{1} \rightarrow m = r$$

$$n^r - r m + r = 0 \rightarrow \alpha^r - r \alpha + r = 0 \rightarrow \alpha^r + r = r \alpha$$

$$(a+b)^r = a^r + b^r + r a b (a+b) \rightarrow \left(\alpha + \frac{r}{\alpha}\right)^r = \alpha^r + \frac{r^r}{\alpha^r} + r \left(\alpha + \frac{r}{\alpha}\right)$$

$$\alpha^r + \frac{r^r}{\alpha^r} = \left(\alpha + \frac{r}{\alpha}\right)^r - r \left(\alpha + \frac{r}{\alpha}\right) = r^r - r^r \rightarrow r^r - r^r = r^r - r^r$$

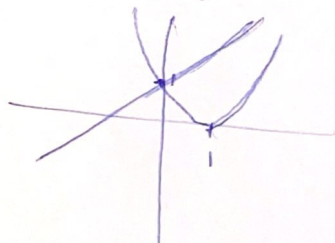
$$\alpha + \frac{r}{\alpha} = \frac{\alpha^r + r}{r} = \frac{r \alpha}{r} = \alpha$$

$$h(t) = -10t^2 + 20t \quad g_s = \frac{-\Delta}{t_a} = \frac{-9800}{-10} = 980$$

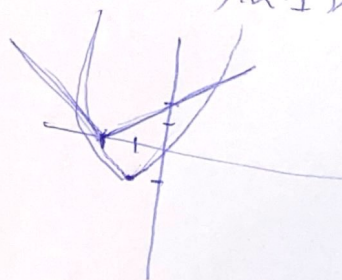
$$h=0 \rightarrow -10t^2 + 20t = 0 \rightarrow t(20 - 10t) = 0 \rightarrow \begin{cases} t=0 \\ t=2 \end{cases}$$

موقع السقوط هو 2

ج1) $(m-1)^r = r m + 1$



$$a = 1, r$$



$$m^r + m = |m + r|$$

$$m = -r, 1$$

(1)