$x^2 + 2(a+1)x + 2a - 1 = 0$ $\quad (=7)$

$\underbrace{\gamma, \alpha}_{\times 4}, \underbrace{\beta}_{\times 4} \Rightarrow \alpha^2 = \underbrace{\beta \times \gamma}_{P} \qquad \alpha^2 = P = \frac{c}{a} = \frac{2a-1}{1}$

$\alpha^2 = 2a - 1 \qquad a^2 - 2a = 1 \rightarrow a^2 - 2a + 1 = 0$

$(a-1)^2 = 0 \rightarrow \boxed{a = 1}$

$x^2 = y \rightarrow y^2 - 7y - 5 = 0 \qquad \frac{7 \pm \sqrt{69}}{2} \rightarrow x = \pm\sqrt{\frac{7+\sqrt{69}}{2}}$ ۸_

$S = \alpha + \beta = \frac{-b}{a} = 7$

$P = \alpha\beta = \frac{-5}{1} = -5$

$2P^2 \rightarrow 2 \times \left(\frac{7+\sqrt{69}}{2}\right)^2 = 59 + 7\sqrt{69} \rightarrow P = \frac{-7+\sqrt{69}}{2}$

۹_

$y = kx^2 - 4x - 6$

↳ رأس $\left| \begin{array}{l} \frac{-b}{2a} = \frac{4}{2k} = \boxed{1} \\ \frac{-\Delta}{4a} = \frac{-(b^2-4ac)}{4k} = \frac{-16-24k}{4k} = -\frac{4(4+6k)}{4k} = -8 \end{array} \right.$

$\left(\frac{4}{2k}, \frac{-4-6k}{k}\right)$

$\frac{-4-6k}{k} = -2\left(\frac{4}{2k}\right) - 4 \rightarrow \frac{-4-6k}{k} = \frac{-8}{k} - 4$

$\frac{-4-6k+8}{k} = \frac{-4}{1}$

$-4k = -6k + 4$

$2k = 4 \quad \boxed{k = 2}$

عرض رأس سهمی: $-\frac{(4+6k)}{k} = \frac{-16}{2} = -8$

۱۰_

$y = -mx^2 + mx + 1 \Rightarrow \Delta = b^2 - 4ac = m^2 - 4(-m)(1) = m^2 + 4m$

$y = -m - x$ معادله خط و معادله درجه ۲ را در یک دستگاه حل کرده تا معادله تقاطع بدست آید:

$-mx^2 + mx + 1 = -m - x \Rightarrow mx^2 - (m+1)x - (m+1) = 0$

$\xrightarrow{\Delta < 0} (m+1)^2 + 4m(m+1) < 0 \rightarrow (m+1)(5m+1) < 0$

$\rightarrow -\frac{1}{5} < m < -1 \rightarrow \{-1\}$

آرشیدا رستگار :

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

$\alpha + \beta = 5 \quad , \quad \alpha = 5 - \beta$

$\alpha\beta = 2$

$\beta^2 = 5\beta - 2$

$\frac{4}{5} \times \frac{5}{\beta^2} + \frac{1}{5}\beta^3 \Rightarrow \frac{4}{5} \times \frac{5 - \beta}{5\beta - 2} + \frac{1}{5}\beta \cdot \frac{\beta^2}{5\beta - 2}$

$\frac{4}{5} \times \frac{5 - \beta}{5\beta - 2} + \frac{1}{5}(5\beta^2 - 2\beta) \Rightarrow \frac{20 - 4\beta}{5(5\beta - 2)} + \frac{23\beta - 10}{5} \times \frac{5\beta - 2}{5\beta - 2}$

$\Rightarrow \frac{47 \times 5\beta - 90}{5(5\beta - 2)} = \boxed{19}$

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۲) صفرهای تابع [illegible]

$\begin{pmatrix} 3 \\ -4 \end{pmatrix} \quad \begin{pmatrix} -1.5 \\ -4 \end{pmatrix}$

در یک سهمی اگر دو نقطه قرینه مفروض داشته باشیم طول رأس سهمی میانگین طول این دو نقطه

در این سوال طول رأس سهمی $x_S = \frac{3}{4}$ است و در نتیجه مجموع صفرهای سهمی برابر $\boxed{2x_S = \frac{3}{2}}$

است.

۳-

$x^2 + 2kx + 5 = 0 \quad (a = 1,\ b = 2k,\ c = 5)$

$|\alpha - \beta| = \frac{\sqrt{\Delta}}{|a|} \Rightarrow \frac{\sqrt{4k^2 - 4(1)(5)}}{1} = \frac{4}{3}k$

$\sqrt{4k^2 - 20} = \frac{4}{3}k \Rightarrow 4k^2 - 20 = \frac{16}{9}k^2 \quad -20 = \frac{16}{9}k^2 - \frac{36}{9}k^2$

$-20 = -\frac{20}{9}k^2 \Rightarrow k^2 = 9 \quad \boxed{k = \pm 3}$

$\left[\frac{9}{2}\right] = [4.5] = \boxed{4}$

بیشترین مقدار $\Rightarrow f\left(-\frac{b}{2a}\right) \quad m > 0$

$x_S = \frac{-b}{2a} = \frac{12}{2m} \longrightarrow \frac{12}{2m} = 2 \Rightarrow m = 3 \qquad 3 = \frac{36}{m} - \frac{72}{m} + 5m - 1$

$3 = \frac{5m^2 - 36}{m}$

$\Rightarrow 5m^2 - 3m - 36 = 0 \quad \frac{3 \pm \sqrt{729}}{10} \Rightarrow 3 \ , \ -2.4$