۱۹,۷۵

هندسی و معانی یازدهم دوره C شماره ۱۴

$y_{max} = -\frac{\Delta}{4a} = -\frac{b^2+12}{-4} = 7$ ①

$b^2+12 = 28 \rightarrow b^2 = 16 \rightarrow b = \pm 4$ ②

② $f(x) = x^4 + 2x^2 + 3 \quad x^2 = t$

$t^2 + 2t + 3 = 0 \rightarrow \Delta = 4 - 12 = -8 < 0$ ②

ریشه ندارد

$f(x) = (4-x^2)^2 - 2(4-x^2) - 15 \quad 4-x^2 = t$

$t^2 - 2t - 15 = (t-5)(t+3) = 0$

$\hookrightarrow t = 5, -3$

$4 - x^2 = 5 \rightarrow -x^2 = 1 \rightarrow x^2 = -1$ ریشه حقیقی ندارد

$4 - x^2 = -3 \rightarrow x^2 = 7 \rightarrow x = \pm\sqrt{7}$

③

$4x^2 - 16x + m = 0$

$x_1, x_2 = \alpha, \alpha+2 \rightarrow 2\alpha + 2 = 4$ ۱,۷۵

$\rightarrow \alpha + 1 = 2 \rightarrow \alpha = 1$

$x = 1 \rightarrow 4 - 16 + m = 0 \rightarrow m = 12$

$(\Delta > 0 \text{ به ازای } 4x^2 - 16x + 12 = 0$ دو ریشه دارد

قابل قبول است $2, 6$

$\beta = 2\alpha - 4$

(۴) $2\alpha - 4 + \alpha = 3\alpha - 4 = 2 \rightarrow 3\alpha = 6$

$\alpha = 2$

(۲) $x=2 \rightarrow 12 - 12 + m - 1 = 0 \rightarrow m = 1$

$3x^2 - 6x = 0 \rightarrow \Delta = 36 - 12 > 0$

۲ ریشه دارد و قابل قبول است

(۳) $\rho = 1 = \frac{m^2 - 2}{-m}$

$-m = m^2 - 2 \rightarrow m^2 + m - 2 = 0$ (۲)

$(m+2)(m-1) = 0$

$m = -2, \quad m = 1$

$m=1 \rightarrow -x^2 + 4x - 1 = 0$

$16 - 4 = 12 > 0 \quad m=1$ ✓

$m=-2 \rightarrow 2x^2 + 4x + 2 = 0$

$16 - 16 = 0$ → یک ریشه ✗

(۹) $\alpha = \frac{4}{\beta^2} \rightarrow \beta \times \frac{4}{\beta^2} = 3$

(۲) $\beta = \frac{4}{3}$

$\frac{16}{9} - \frac{4}{3}m + 3 = 0 \rightarrow 16m = 48 \rightarrow m = \frac{48}{16}$

$x^2 - \frac{48}{16}x + 3 \rightarrow \left(\frac{48}{16}\right)^2 - 12 > 0$ ✓

30 March 2024

رمضان ۱۴۴۵ ۱۹

۱۴۰۳

۱۷) $\alpha \to 3\alpha \qquad 4\alpha = 4 \to \alpha = 1$

$3^{\alpha} = m \to m = 3$

۱۸) $x^2 - 4x + 3 = 0 \qquad 16 - 12 = 4 > 0$

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

$\frac{\alpha^4 + 2}{\alpha} = \frac{7\alpha}{\alpha} = 7$

۱۹) $\frac{9^2 + 4}{9^2} = \frac{(x^2+2)^2 - 4x^2}{x^2} \to \frac{(x^2-2)^2}{x^2} = 4 = 4, -4, 4, -4$

$7(4a - 1) = 3 \cdot 1$

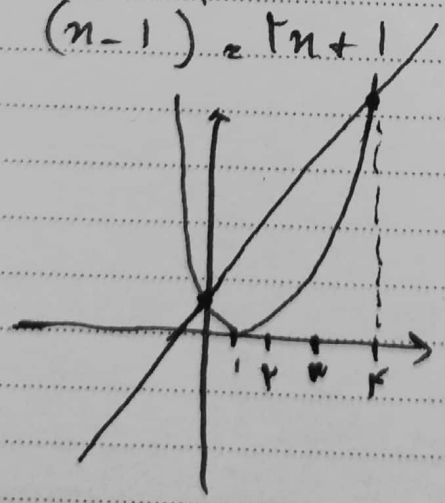
۲۰) $\int_0^{\frac{\pi}{4}} \sin(2t - \frac{\pi}{2})\,dt = 0 \to$ زمان برخورد سوم

$t = 0, \frac{\pi}{4}$

$t = \frac{5\pi}{4}$

$\text{ارتفاع سوم} = 4 + \frac{25\pi^2}{16} = 49.4$

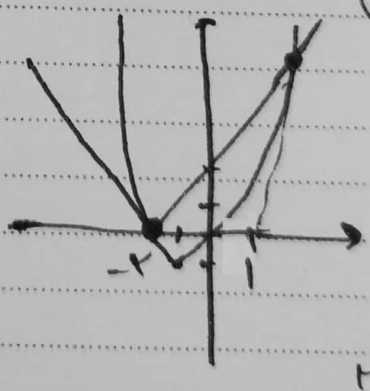
۲۱) $(x-1)^2 = 2x + 1$



$x = 0, 4$

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

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



$x = 2 - \sqrt{5}$

$y = 2 - \sqrt{5}$

$x^2 + 2x = x + 2 \qquad x \geq 0$

$x^2 + x - 2 = 0$

$x = 1, -2$

$x^2 + 2x = -x - 2 \qquad x < 0$

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

$x = -1, -2$