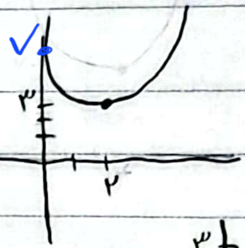
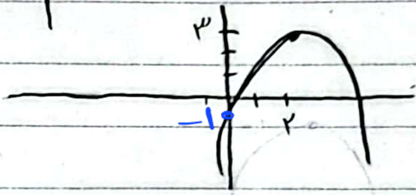
۱۹٫۵

۱) الف) $x_s = -\frac{b}{2a} = 2$ $y_s = 4 - 8 + 7 = 3$



۱٫۵

ب) $x_s = 2$ $y_s = -4 + 8 - 1 = 3$



---

۲) الف) $\Delta > 0 \to (m+1)^2 - 4(2)(\frac{1}{2}m + 2) > 0 \to m^2 - 2m - 15 > 0$ $(m-5)(m+3) > 0$

x		-3		5	
P	$+$	0	$-$	0	$+$

$(-\infty, -3) \cup (5, +\infty)$

ب) $\Delta = 0 \to (m-5)(m+3) = 0$ $m = \{-3, 5\}$

۲

ج) $\Delta < 0 \to (m-5)(m+3) < 0$

x		-3		5	
P	$+$	0	$-$	0	$+$

$\to (-3, 5)$

د) $\Delta \geq 0 \to (m-5)(m+3) \geq 0$

x		-3		5	
P	$+$	0	$-$	0	$+$

$(-\infty, -3] \cup [5, +\infty)$

---

۳) الف) $\Delta > 0$ $(2m+2)^2 - 4(m-2)(10) > 0 \to 4m^2 - 32m + 84 > 0$ چون عبارت ریشه ندارد دلتا همواره برقرار است.

$S < 0$ $\frac{2(m+1)}{m-2} < 0$

x		-1		2	
P	$+$	0	$-$	0	$+$

$(-1, 2)$

$P > 0 \to \frac{10}{m-2} > 0$

x		2	
P	$-$	0	$+$

$(2, +\infty)$

$m \to \varnothing$

۲

ب) $\Delta > 0 \to 4m^2 - 32m + 84 > 0 \to$ همواره برقرار

$S < 0 \to \frac{2(m+1)}{m-2} < 0$

x		-1		2	
P	$+$	0	$-$	0	$+$

$\to (-1, 2)$

$P < 0$ $\frac{10}{m-2} < 0$

x		2	
P	$-$	0	$+$

$\to (-\infty, 2)$

$m \to (-1, 2)$

سوال ۴ در ص بعد

---

۵) $\Delta \geq 0 \to 4\sin^2\alpha - 4(\frac{2}{3})(\frac{3}{2}) \geq 0 \to 4\sin^2\alpha \geq 4 \to \sin^2\alpha \geq 1 \to \sin\alpha = 1, -1$

$\sin\alpha = 1 \to 4x^2 - 12x + 9 = 0 \to (2x - 3)^2 = 0 \to x = \frac{3}{2}$

۲

$\sin\alpha = -1 \to 4x^2 + 12x + 9 = 0 \to (2x + 3)^2 = 0 \to -\frac{3}{2}$ ✗

Subject. Day. Month. Year.

۴) الف) $\Delta > 0 \rightarrow (2m+2)^2 - 4(m-2)(10) > 0$ ← همیشه برقرار

$P < 0 \rightarrow \frac{10}{m-2} < 0$ | $\frac{2}{-\ \ +}$ $(-\infty, 2)$ $m \in (-\infty, +2)$ ✓

ب) $-\frac{b}{2a} = -2 \rightarrow -\frac{b}{a} = -4 \rightarrow \frac{m+1}{m-2} = -2 \rightarrow m+1 = -2m+4 \rightarrow 3m = 3 \rightarrow \boxed{m=1}$ ✓

۶) $\frac{(x-1)(3x+1)(2x-5)(x+1)}{(1-x)(1+x)} = -4x^2 + 13x + 5 \rightarrow y_S = \frac{-((13)^2 - 4(-4)(5))}{4(-4)} = \frac{289}{24}$ ✓

۷)

$3S = 5P + V \rightarrow 3\left(\frac{m+2}{m}\right) = 5\left(-\frac{2}{m}\right) + V \rightarrow \frac{3m+6+10}{m} = V \rightarrow m = 4$ ✓

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

$\alpha^2 + \beta^2 = S^2 - 2P = \left(\frac{4}{4}\right)^2 - 2\left(-\frac{1}{2}\right) = \frac{13}{4}$

سوال ۸ در پایین صفحه

۹) $x = -2 \rightarrow y_1 = 4a + 2b + 4 \quad y_2 = 14 \xrightarrow{y_1 = y_2} 2a + b = 5 \rightarrow 5a = 5 \rightarrow \boxed{a=1} \ \boxed{b=3}$ ✓

$x = -3 \rightarrow y_1 = 9a - 3b + 4 \quad y_2 = 4 \xrightarrow{y_1 = y_2} 9a - 3b = 0 \rightarrow 3a = b$

$y_1 = x^2 + 3x + 4 \rightarrow -\frac{b}{2a} = \frac{-3}{2}$

۱۰) $2x^2 + (m+1)x + m + 4 = x \rightarrow 2x^2 + mx + m + 4 = 0 \xrightarrow{\Delta = 0} m^2 - 4(m+4)(2) = 0$

$(m-12)(m+4) = 0 \Rightarrow m \rightarrow -4 \Rightarrow (x-1)^2 = 0 \rightarrow |1| \rightarrow$ ناصحیح $\rightarrow$ قبول $\boxed{m=-4}$

$\rightarrow +12 \Rightarrow (x+3)^2 = 0 \rightarrow |-3| \rightarrow 3$ ناصحیح $\rightarrow$ غیرقابل قبول ✓

۸) $\frac{4\alpha + \beta^3}{5\beta^2} = \frac{1}{5}\left(\frac{4\alpha + \beta^3}{\beta^2}\right) = \frac{1}{5}\left(\frac{4\alpha}{\frac{4}{\alpha^2}} + \beta^3\right) = \frac{1}{5}\underbrace{\left(\alpha^3 + \beta^3\right)}_{S^3 - 3SP} =$

$\frac{12a - 3b}{5} = \boxed{19}$ ✓

MR