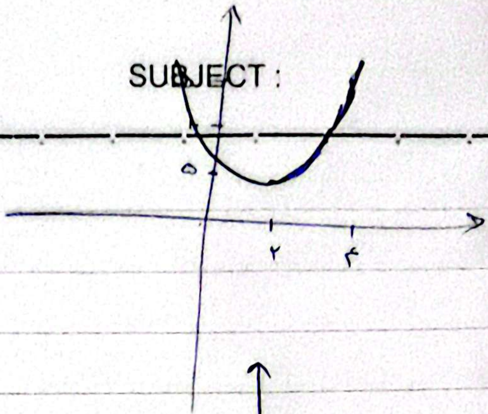
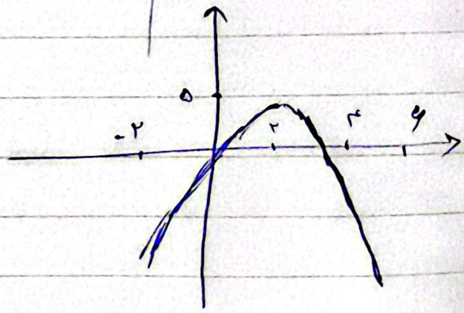
مسائل معادلات تکلیف سری ۱۲

DATE / / SUBJECT :

① الف) x^2-4x+5



ب) $-x^2+4x-1$



② $2x^2+(m+1)x+\frac{1}{2}m+2=0$

$2+\frac{1}{2}m=c \qquad (1+m)=b \qquad a=2$

$\Delta=b^2-4ac=(1+m)^2-(m+2(\frac{1}{2})(2))4 \to \Delta=m^2-2m-15$

الف) $\Delta>0 \to (m-5)(m+3)>0 \to m>5$ یا $m<-3$

ب) $\to 0=m^2-2m-15 \to m=5$ یا $m=-3 \Rightarrow 0=(3+m)(m-5)$

ج) $-3>m>5$

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

③ $y=(m-2)x^2-2(m+1)x+10$

الف - $\Delta>0 \to 4(m+1)^2-4\cdot(m-2) \Rightarrow 4m^2-32m+84$

$\to \Delta>0 \to =\frac{\sqrt{84-64}\pm 8}{2}=m \to =\Delta<0 \to$ عبارت همیشه مثبت

$P>0 \Rightarrow S=-\frac{b}{a}=\frac{-2(m+1)}{m-2}<0 \to (-1,2)$

$S<0 \Rightarrow P=\frac{c}{a}=\frac{10}{m-2}>0 \to m>2$

م

$m\in(-\infty,\infty)$ $\cap$

$m\in(-1,2)$ $\cap$

$m\in(2,+\infty)$

$\varnothing$

ب) $P=\frac{c}{a}=\frac{10}{m-2}<0 \to m<2 \qquad (-\infty,2)$

$\cap \quad \Rightarrow m\in(-1,2)$

$S=-\frac{b}{a}=\frac{2(m+1)}{m-2}<0 \qquad (-1,2)$

سایا صادری

۴) $y = (m-2)x^2 - 2(m+1)x + 10$

$\Delta > 0 \longrightarrow [-2(m+1)]^2 - 4(m-2)(10) \rightarrow m^2 - 8m + 21 > 0$

$\Rightarrow m = \dfrac{8 \pm \sqrt{64 - 84}}{2}$

$P = \dfrac{c}{a} = \dfrac{10}{m-2}$

$P < 0 \longrightarrow \dfrac{10}{m-2} < 0 \Rightarrow m - 2 < 0 \longrightarrow \boxed{m < 2}$

ب) $x = -2$

$x = -\dfrac{b}{2a} \longrightarrow m + 1 = -2(m-2) \Rightarrow m + 1 = -2m + 4 \Rightarrow 3m = 3 \longrightarrow \boxed{m = 1}$

۵) $\dfrac{2x^2}{3} - 2(\sin\alpha)x + \dfrac{3}{2} = 0$

$\longrightarrow$ ریشه حقیقی $\longrightarrow \Delta \geq 0 \longrightarrow (-2(\sin\alpha))^2 - 4\left(\dfrac{2}{3}\right)\left(\dfrac{3}{2}\right) \Rightarrow 4\sin^2\alpha - 4 = 4(\sin^2\alpha - 1) = -4\cos^2\alpha$

$\longrightarrow \Delta \geq 0 \longrightarrow -4\cos^2\alpha \geq 0 \Rightarrow \cos^2\alpha \leq 0 \longrightarrow \cos\alpha = 0 \longrightarrow \alpha = \dfrac{\pi}{2} + k\pi$

④ $= (3x^2-2x-1)(2x^2-3x-5) =$

$x=-\frac{1}{3}$ $\quad x=1$ $\quad x=\frac{5}{2}$ $\quad x=-1$

$1-x^2 \to -(x-1)(x+1)$

$(x-1)(3x+1) \qquad (x+1)(2x-5)$

$$y=\frac{\cancel{(x-1)}(3x+1)\cancel{(x+1)}(2x-5)}{-\cancel{(x-1)}\cancel{(x+1)}}=-(3x+1)(2x-5)$$

$$y=-(6x^2-15x+2x-5) \longrightarrow y=-6x^2+13x+5$$

$$x=-\frac{13}{2(-6)}=\frac{+13}{+12}=\frac{13}{12}$$

$$y=-6\left(\frac{13}{12}\right)^2+13\left(\frac{13}{12}\right)+5$$

$$y=-6\left(\frac{169}{144}\right)+\frac{169}{12}+5 \to y=\frac{-169+338}{24}+5$$

$$y_{max}=\frac{169}{24}+5=\frac{289}{24}$$

مانیا طاهری

۷) $m x^{۲} - (m+۲)x - ۲ = ۰$

$$۳(\alpha+\beta) = ۵(\alpha\beta) + ۷$$

$$\alpha+\beta = \frac{m+۲}{m} \qquad \alpha\beta = \frac{-۲}{m}$$

$$۳\left(\frac{m+۲}{m}\right) = ۵\left(\frac{-۲}{m}\right) + ۷$$

$$۳(m+۲) = -۱۰ + ۷m \longrightarrow ۳m+۶ = ۷m-۱۰ \rightarrow ۱۶ = ۴m \rightarrow m = ۴$$

$$\alpha^{۲}+\beta^{۲} = (\alpha+\beta)^{۲} - ۲\alpha\beta$$

$$\left(\frac{m+۲}{m}\right)^{۲} - ۲\left(\frac{-۲}{m}\right) \longrightarrow m=۴ \rightarrow \frac{(۶)^{۲}+۱۶}{۱۶} = \frac{۵۲}{۱۶} = \frac{۱۳}{۴}$$

$y=$ [illegible]

8) $x^2-5x+2=0$ $\frac{4\alpha+\beta^5}{5\beta^2}$ $\alpha\beta=2$, $\alpha+\beta=5$

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

$\beta^3=23\beta-10$, $\beta^4=105\beta-46$, $\beta^5=479\beta-210$

$\frac{1}{\beta^2}=\frac{\alpha^2}{4}$, $\alpha\beta=2$, $\frac{1}{\beta}=\frac{\alpha}{2}$

$\frac{4\alpha+\beta^5}{5\beta^2}=\frac{475\beta-190}{5\beta^2}\longrightarrow\frac{95\beta-38}{\beta^2}=95\frac{1}{\beta}-38\frac{1}{\beta^2}$

$\Rightarrow 95\frac{\alpha}{2}-38\frac{\alpha^2}{4}=\frac{95\alpha-19\alpha^2}{2}\Rightarrow \alpha^2=5\alpha-2$

$\rightarrow \frac{95\alpha-95\alpha+38}{2}=\boxed{19}$

9) $y_1=ax^2+bx+c$ $x=2$ $x=-3$

$y_2=2x+10$ $(2,14)$ $(-3,4)$ $(0,4)$

~~$x=$ [illegible]~~

$4a+2b+c=14$ $4a+2b+4=14$

$9a-3b+c=4$ $4a+2b=10 \to 2a+b=5$

$9a-3b=0$

$c=4$ $3a=b$ $2a+3a=5$

$a=1$

$b=3$

10) $y=2x^2+(m+1)x+m+4 \to 2x^2+(m+1-1)x+(m+4)=0$ $y=x$

$\Delta=0\longrightarrow (m)^2-4(2)(m+4)\to m^2-8(m+4)=0$

$m^2-8m-48=0$

$(m-12)(m+4)=0$

$m=12$ $m=-4$