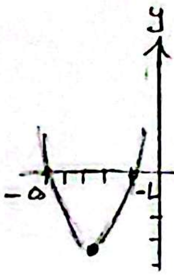
نام و نام خانوادگی ...آرا جاتقی..... پاسخنامه تشریحی تکلیف شماره ...۱... کلاس ....دهم....

۱

الف) $\begin{bmatrix} -3 \\ 4 \end{bmatrix}$

$min \begin{cases} \frac{-b}{2a} \Rightarrow \frac{-6}{2} = -3 \\ \frac{-\Delta}{4a} \Rightarrow \frac{b^2-4ac}{4a} = \frac{36-4(1)(5)}{4} = \frac{16}{4} = 4 \end{cases}$

ب)

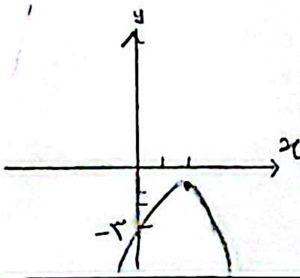


۲

الف) $\begin{bmatrix} 2 \\ -1 \end{bmatrix}$

$max \begin{cases} \frac{-b}{2a} \Rightarrow \frac{-4}{2(-1)} = \frac{-4}{-2} = 2 \\ \frac{-\Delta}{4} \Rightarrow \frac{b^2-4ac}{4a} = \frac{16-4(-1)(-3)}{4(-1)} = \frac{16-12}{-4} = \frac{4}{-4} = -1 \end{cases}$

الف)



ب) این نقطه برخورد نمی‌کند با محورها.

۳

الف) $(2x^2-3x+a=0)$ $a=-1 \Rightarrow \Delta = 9-4(2)(-1) = 9+8 \rightarrow \Delta > 0$ معادله دارای ۲ ریشه متمایز

ب) $a = \frac{9}{8} \Rightarrow \Delta = 9 - 4(2)(\frac{9}{8}) = 0 \longrightarrow \Delta = 0 \Rightarrow$ معادله دارای یک ریشه مضاعف

ج) $a=5 \Rightarrow \Delta = b^2-4ac \Rightarrow \Delta = 9 - 4(2)(5) = 9-40 = -31$ $\Delta < 0$ معادله جواب ندارد

د) $a=1 \rightarrow$ جمع ریشه‌ها $= 2-3+1 = 0 \Rightarrow x=1 \longrightarrow 1$ ، $x = \frac{c}{a} \rightarrow \frac{1}{2}$

۴

الف) $x^2-2x-1=0 \rightarrow x^2-2x=1 \xrightarrow{+1} x^2-2x+1=2$

$(x-1)^2 = 2 \rightarrow x-1 = \pm\sqrt{2} \rightarrow x = 1+\sqrt{2}$ ، $x = 1-\sqrt{2}$

ب) $x^2-x-1=0 \xrightarrow{+\frac{1}{4}} x^2-x+\frac{1}{4} = \frac{1}{4}+1$

$(x-\frac{1}{2})^2 = \frac{5}{4} \rightarrow x-\frac{1}{2} = \pm\sqrt{\frac{5}{4}} \rightarrow x = \frac{1}{2} \pm \frac{\sqrt{5}}{2} \rightarrow x = \frac{1+\sqrt{5}}{2}$ ، $x = \frac{1-\sqrt{5}}{2}$

۵

الف) $x^2-2x-1=0 \longrightarrow \Delta = b^2-4ac \Rightarrow \Delta = 4-4(1)(-1) = 8$

$x = \frac{-b\pm\sqrt{\Delta}}{2a} \Rightarrow \frac{-(-2)\pm\sqrt{8}}{2} = \frac{4\pm2\sqrt{2}}{2} \Rightarrow x \rightarrow \frac{4+2\sqrt{2}}{2} = \frac{2(2+\sqrt{2})}{2} = 2+\sqrt{2}$

$\frac{4-2\sqrt{2}}{2} = \frac{2(2-\sqrt{2})}{2} = 2-\sqrt{2}$

ب) $x^2+x-4=0 \longrightarrow \Delta = 1-4(1)(-4) = 16$ $x = \frac{-b\pm\sqrt{\Delta}}{2} \rightarrow x = \frac{-1\pm\sqrt{16}}{2} \rightarrow x = \frac{-1\pm4}{2} \rightarrow x = \frac{3}{2}$ ، $\frac{-5}{2}$

۶

الف) $x^2 - 11x + 28 \Rightarrow (x-7)(x-4)=0 \longrightarrow x-7=0 \Rightarrow x=7$
$\hookrightarrow x-4=0 \Rightarrow x=4$

ب) $x^2 + 3x - 28 \Rightarrow (x+7)(x-4)=0 \longrightarrow x+7=0 \Rightarrow x=-7$
$\hookrightarrow x-4=0 \Rightarrow x=4$

۷

الف) $5x^2 - 12x + 7 = 0 \rightsquigarrow x^2 - 12x + 35 = 0$ حل مشترک $(x-7)(x-5)=0$
$\hookrightarrow x-7=0 \rightarrow x=\frac{7}{1}$
$\hookrightarrow x-5=0 \rightarrow x=\frac{5}{5}=1$

ب) $3x^2 - 10x + 7 = 0 \rightsquigarrow x^2 - 10x + 21 = 0$ حل مشترک $(x-7)(x-3)=0$
$\hookrightarrow x-7=0 \rightarrow x=\frac{7}{1}$
$\hookrightarrow x-3=0 \rightarrow x=\frac{3}{3}=1$

۸

الف) $2x^2 - 5x + 3 = 0 \Rightarrow x^2 - 5x + 6 \rightarrow (x-2)(x-3)=0 \longrightarrow x-2=0 \rightarrow x=\frac{2}{1}$
$\hookrightarrow x-3=0 \rightarrow x=\frac{3}{1}$

ب) $2x^2 + 5x + 3 = 0 \longrightarrow a+c=b \Rightarrow x=-1 \;/\; x=\frac{-c}{a}=\frac{-3}{2}$

ج) $2x^2 - 5x + 1 = 0 \rightarrow \Delta = b^2 - 4ac$
$\Delta = 25 - 4(2)(1) = 17$
$x = \frac{-b \pm \sqrt{17}}{2a} = \frac{5 \pm \sqrt{17}}{4} \rightarrow x = \frac{5+3\sqrt{2}}{2}$
$\hookrightarrow x = \frac{5-3\sqrt{2}}{2}$

د) $4x^2 + 7x + 9 = 0 \longrightarrow x(4x+14)=0 \longrightarrow x=0$ / $4x+14=0 \rightarrow 4x=-14 \rightarrow x=-4$

۹

الف) $s^2 - 2p = (\frac{-4}{-2})^2 - 2(\frac{-4}{-2}) = 14 + 12 = 28$

ب) $s^3 - 2p = (\frac{-3}{-2})^3 - 3(\frac{-3}{-2})(\frac{-12}{-4}) = -54 - 72 = -126$

۱۰

الف) $\binom{7}{5} + \binom{9}{2} = \frac{7!}{5!(7-5)!} + \frac{9!}{2!(9-2)!} = \frac{2!}{2!} + \frac{7!}{7!} = 1+1=2$

ب) $\binom{9}{3} - \binom{4}{2} = \frac{9!}{3!(9-3)!} - \frac{4!}{2!(4-2)!} = \frac{4!}{4!} - \frac{4!}{4!} = 1-1=0$