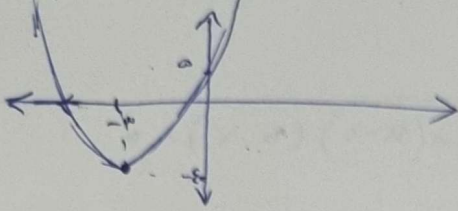
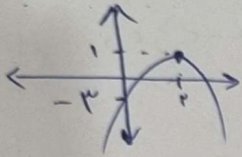


الف) سیمو است
 $y = x^2 + 4x + 5 \rightarrow a > 0 \Rightarrow \mu_{\min} \left| \begin{array}{c} -\frac{b}{2a} \\ -\frac{\Delta}{4a} \end{array} \right| = \left[\mu_{\min} \left| \begin{array}{c} -2 \\ -1 \end{array} \right| \right]$
 $\Delta = b^2 - 4ac = 16 - 20 = -4$
 $\mu_{\min} = -2$
 $y = 4 - 16 + 5 = -7$



ب) است
 $y = -x^2 + 5x - 3$
 $\mu_{\max} \left| \begin{array}{c} -\frac{b}{2a} \\ -\frac{\Delta}{4a} \end{array} \right| = \left[\mu_{\max} \left| \begin{array}{c} 2.5 \\ 1 \end{array} \right| \right]$
 $\Delta = 25 - 24 = 1$



ج) است
 $y = x^2 + 5x - 6$
 $y = 0 \rightarrow x^2 + 5x - 6 = 0$
 $x = 1$
 $x = \frac{-5 \pm \sqrt{25 + 24}}{2} = \frac{-5 \pm 7}{2}$
 $x = 1$
 $x = -6$

الف) است
 $2x^2 - 3x + 5 = 0$
 $\Delta < 0 \rightarrow b^2 - 4ac < 0 \rightarrow 9 - 20 < 0 \rightarrow 9 < 20 \rightarrow 18 < 40 \rightarrow a < \frac{9}{2} \rightarrow (-\infty, \frac{9}{2})$

ب) است
 $\Delta = 0 \rightarrow b^2 - 4ac = 0 \rightarrow 9 - 20 = 0 \rightarrow 9 = 20 \rightarrow a = \frac{9}{2}$

ج) است
 $\Delta > 0 \rightarrow b^2 - 4ac > 0 \rightarrow 9 - 20 > 0 \rightarrow 9 > 20 \rightarrow 18 > 40 \rightarrow a > \frac{9}{2} \rightarrow (\frac{9}{2}, +\infty)$

د) است
 $\Delta > 0 \rightarrow b^2 - 4ac > 0 \rightarrow 9 - 20 > 0 \rightarrow 9 > 20 \rightarrow 18 > 40 \rightarrow a > \frac{9}{2} \rightarrow (-\infty, \frac{9}{2})$

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

ب) است
 $x^2 - x - 1 = 0 \xrightarrow{+\frac{1}{4}} x^2 - x + \frac{1}{4} = \frac{5}{4} \rightarrow (x - \frac{1}{2})^2 = \frac{5}{4} \rightarrow x - \frac{1}{2} = \pm\sqrt{\frac{5}{4}}$
 $x = \frac{1 + \sqrt{5}}{2}$
 $x = \frac{1 - \sqrt{5}}{2}$

الف) است
 $x^2 - 2x - 1 = 0 \rightarrow \Delta = 4 - (-4) = 8 \rightarrow x = \frac{2 \pm \sqrt{8}}{2} = 1 \pm \sqrt{2}$
 $x = 1 + \sqrt{2}$
 $x = 1 - \sqrt{2}$

ب) است
 $x^2 + x - 5 = 0 \rightarrow \Delta = 1 + 20 = 21 \rightarrow x = \frac{-1 \pm \sqrt{21}}{2}$
 $x = \frac{-1 + \sqrt{21}}{2}$
 $x = \frac{-1 - \sqrt{21}}{2}$

$$\text{الف) } n^2 - 11n + 28 = 0 \rightarrow (n-4)(n-7) = 0 \Rightarrow n = 4, 7$$

$$\text{ب) } n^2 + 3n - 28 = 0 \rightarrow (n+7)(n-4) = 0 \Rightarrow n = 4, -7$$

$$\text{الف) } an^2 - 12n + 7 = 0 \rightarrow n^2 - 12n + 28 = 0 \rightarrow (n-4)(n-7) = 0$$

$$\Rightarrow n = \frac{a}{a}, \frac{7}{a} = \boxed{1, \frac{7}{a}}$$

$$\text{ب) } 3n^2 - 10n + 7 = 0 \rightarrow n^2 - 10n + 21 = 0 \rightarrow (n-3)(n-7) = 0$$

$$n = \frac{3}{3}, \frac{7}{3} = \boxed{1, \frac{7}{3}}$$

$$\text{الف) } 2n^2 - 5n + 2 = 0 \xrightarrow{\text{بجاء صواب}} n = 1, \frac{2}{a} \rightarrow n = 1, \frac{2}{f}$$

$$\text{ب) } 2n^2 + 5n + 2 = 0 \xrightarrow{\text{بجاء صواب}} n = -1, -\frac{2}{a} \rightarrow n = -1, -\frac{2}{f}$$

$$\text{ج) } 2n^2 - 5n + 1 = 0 \xrightarrow{\Delta} \Delta = 25 - 4 = 17 \rightarrow n = \frac{5 \pm \sqrt{17}}{4} \xrightarrow{\text{بجاء صواب}} \frac{5 + \sqrt{17}}{4}, \frac{5 - \sqrt{17}}{4}$$

$$\text{د) } 2n^2 + 7n + 9 = 0 \xrightarrow{\Delta} \Delta = 49 - 72 = -23 \rightarrow \Delta < 0 \Rightarrow \text{لا يوجد}$$

$$n^2 - 3n - 2 = 0 \rightarrow S = -\frac{b}{a} \quad P = \frac{c}{a} \Rightarrow S = 3 \quad P = -2$$

$$\Delta = 9 + 8 = 17$$

$$\text{الف) } = 9 + 2 = \boxed{11}$$

$$\text{ب) } = 27 - 3 \times 3 \times -2 = \boxed{27}$$

$$\text{الف) } \binom{7}{5} + \binom{9}{7} = \binom{7}{2} + \binom{9}{2} = \frac{7 \times 6}{2!} + \frac{9 \times 8}{2!} = \frac{42 + 72}{2} = \boxed{57}$$

$$\text{ب) } \binom{9}{8} - \binom{1}{1} = \frac{9 \times 8 \times 7}{3!} - \frac{1 \times 1}{1!} = \frac{84}{6} - 1 = 14 - 1 = 13 = \boxed{13}$$

$$\binom{n}{n} = \frac{n!}{n!(n-n)!}$$