

$$الف) u^2 - 11u + 28 = 0$$

$$(u - 4)(u - 7) = 0$$

$$u - 4 = 0 \rightarrow u = 4$$

$$u - 7 = 0 \rightarrow u = 7$$

$$ب) u^2 + 3u - 28 = 0$$

$$(u - 4)(u + 7) = 0$$

$$u - 4 = 0 \rightarrow u = 4$$

$$u + 7 = 0 \rightarrow u = -7$$

$$الف) 5u^2 - 12u + 8 = 0$$

$$\alpha$$

$$u^2 - 12u + 16 = 0$$

$$(u - 4)(u - 4) = 0$$

$$u = \frac{12 \pm \sqrt{144 - 64}}{2} = \frac{12 \pm 8}{2} = 10, 2$$

$$ب) 3u^2 - 10u + 8 = 0$$

$$\alpha$$

$$u^2 - 10u + 27 = 0$$

$$(u - 3)(u - 9) = 0$$

$$u = \frac{10 \pm \sqrt{100 - 108}}{2} = \frac{10 \pm 2}{2} = 6, 4$$

$$الف) 2u^2 - 5u + 3 = 0$$

$$2 + 2 - 5 = 0 \rightarrow 2 + 2 = 5 \rightarrow \frac{5}{2} = 2.5$$

$$ب) 2u^2 + 5u + 3 = 0$$

$$2 + 2 = 5 \rightarrow 2 + 2 = 5 \rightarrow \frac{5}{2} = 2.5$$

$$ج) 2u^2 - 5u + 1 = 0$$

$$\Delta = b^2 - 4ac = 25 - 8 = 17$$

$$د) 4u^2 + 6u + 9 = 0$$

$$\Delta = 36 - 144 = -108$$

$$u^2 - 3u - 2 = 0$$

$$3 = \frac{3}{1} = \frac{-(-3) \pm \sqrt{9 + 8}}{2} = 5, -2$$

$$الف) s^2 - 2p$$

$$9 - 2(-2) = 13$$

$$-2 = \frac{-2}{1} \rightarrow \frac{2}{1} = 2$$

$$ب) s^2 - 3ps$$

$$25 - 3(-2)(3) = 49$$

$$الف) \binom{5}{0} + \binom{9}{1} = \frac{5!}{0! \times 5!} + \frac{9!}{1! \times 8!} = \frac{5 \times 4 \times 3 \times 2 \times 1}{1 \times 120} + \frac{9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}{1 \times 40320} = \frac{1}{24} + \frac{1}{56} = \frac{5 + 6}{168} = \frac{11}{168}$$

$$21 + 39 = 60$$

$$ب) \binom{9}{3} - \binom{1}{2} = \frac{9!}{3! \times 6!} - \frac{1!}{2! \times 1!} = \frac{9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}{6 \times 720} - \frac{1}{2} = \frac{1}{2} - \frac{1}{2} = 0$$

$$11 - 21 = -10$$

$$18 - 21 = -3$$

$y = x^2 + 4x + 5$ ✓
 ent / $-\frac{b}{2a} \rightarrow -\frac{4}{2} = -2$ $\frac{b}{a} = \frac{4}{1}$
 $y = (-2)^2 + 4(-2) + 5 = 4 - 8 + 5 = 1$
 min (الف) $a > 0$ راست به بالا
 ent / $-\frac{b}{2a} \rightarrow -\frac{4}{2} = -2$ $\frac{b}{a} = \frac{4}{1}$
 $y = (-2)^2 + 4(-2) + 5 = 4 - 8 + 5 = 1$
 min (الف) $a > 0$ راست به بالا

$y = -x^2 + 4x - 3$
 ent = $-\frac{b}{2a} \rightarrow -\frac{4}{-2} = 2$
 $y = -(2)^2 + 4(2) - 3 = -4 + 8 - 3 = 1$
 max (الف) $a < 0$ چپ به راست
 ent = $-\frac{b}{2a} \rightarrow -\frac{4}{-2} = 2$
 $y = -(2)^2 + 4(2) - 3 = -4 + 8 - 3 = 1$
 max (الف) $a < 0$ چپ به راست

$2x^2 - 3x + a = 0$ $\Delta = (-3)^2 - 4ac = 9 - 12a$
 $\Delta > 0 \rightarrow 9 - 12a > 0 \rightarrow 9 > 12a \rightarrow a < \frac{3}{4}$
 $\Delta = 0 \rightarrow 9 - 12a = 0 \rightarrow 9 = 12a \rightarrow a = \frac{3}{4}$
 $\Delta < 0 \rightarrow 9 - 12a < 0 \rightarrow 9 < 12a \rightarrow a > \frac{3}{4}$
 $\Delta \geq 0 \rightarrow 9 - 12a \geq 0 \rightarrow 9 \geq 12a \rightarrow a \leq \frac{3}{4}$

$x^2 - 2x - 1 = 0$ $\Delta = 4 + 4 = 8$
 $x = \frac{2 \pm \sqrt{8}}{2} = 1 \pm \sqrt{2}$
 $x = 1 + \sqrt{2}$
 $x = 1 - \sqrt{2}$
 $x^2 - x - 1 = 0$ $\Delta = 1 + 4 = 5$
 $x = \frac{1 \pm \sqrt{5}}{2}$
 $x = \frac{1 + \sqrt{5}}{2}$
 $x = \frac{1 - \sqrt{5}}{2}$

$x^2 - 2x - 1 = 0$ $\Delta = 4 + 4 = 8$
 $x = \frac{2 \pm \sqrt{8}}{2} = 1 \pm \sqrt{2}$
 $x = 1 + \sqrt{2}$
 $x = 1 - \sqrt{2}$
 $x^2 + x - 4 = 0$ $\Delta = 1 + 16 = 17$
 $x = \frac{-1 \pm \sqrt{17}}{2}$
 $x = \frac{-1 + \sqrt{17}}{2}$
 $x = \frac{-1 - \sqrt{17}}{2}$