

سوال 1: سمت الن

$$\left. \begin{aligned} 9 &= 3x - y \\ -4 &= x + 2y \end{aligned} \right\} \Rightarrow \left. \begin{aligned} 18 &= 6x - 2y \\ -4 &= x + 2y \end{aligned} \right\} \Rightarrow 14 = 7x \quad \boxed{x = 2}$$

$$-4 = 2 + 2y \rightarrow y = -3 \quad \frac{x}{y} = -\frac{2}{3}$$

سوال 2: سمت ب

$$\left. \begin{aligned} \frac{1}{x} - \frac{1}{y} &= -1 \\ \frac{5}{x} - \frac{7}{y} &= -2 \end{aligned} \right\}$$

$$\left. \begin{aligned} 3y + 3x &= 3xy \\ 5y - 7x &= -2xy \end{aligned} \right\} \begin{aligned} 2y - 4x &= 0 \\ 2y &= 4x \\ \frac{x}{y} &= \frac{2}{4} = \frac{1}{2} \end{aligned}$$

سوال 3: $m^2 - 3m = -2$ $m^2 - 3m + 2 = 0$

$m = 1$ $m = 2$

تابع نبت
 $\{(-1, -2), (3, 5), (-1, -2), (2, 4), (2, 4), (3, 5)\}$

$m = 2$
 $\{(-1, -2), (3, 5), (-1, -2), (3, 5), (2, 4), (4, 9)\}$

ب ازای صحیح مقدار m تابع نبت

سوال 4: $f(a) + 2f(2) = 3f(1)$

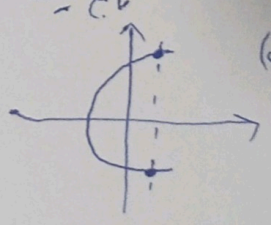
$2a + 2b = -9$

$-9 + 2b = -9$

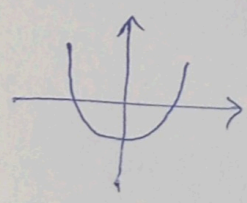
$a + 2 = 2$
 $a = 0$

$b = 0$

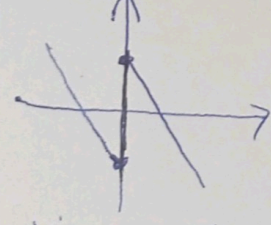
سوال 5: (الف)



(ب) تابع است

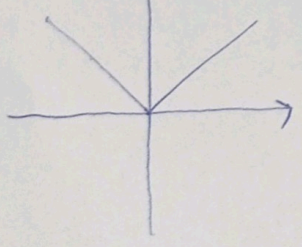


(ج) تابع نبت



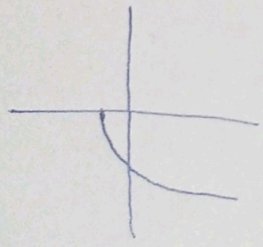
دری یک خوا محدود در نقطه برخورد دارد

(د) تابع است



$y = -\sqrt{x+1}$

(الف) تابع است



سوال 6: (ب) تابع $x = x_1$ $x = x_2$

$\frac{x_2}{y_1} = \frac{y_1}{\sqrt{1-y_1^2}}$
 $\frac{y_1}{\sqrt{1-y_1^2}} = \frac{y_2}{\sqrt{1-y_2^2}}$
 $\frac{y_1^2}{1-y_1^2} = \frac{y_2^2}{1-y_2^2}$
 $y_1^2 = y_2^2$
 $y_1 = \pm y_2$
 معنی تابع قبول نیست

الف) $|y| = x$
تابع نبت

$|y| = 1$

$y = \pm 1$

ب) $y^r + r y^{r-1} + r^2 y + x^r + x = 0$

$x_1 = x_2 \quad y_1^r + r y_1^{r-1} + r^2 y_1 + 1 = 1 - x - x^r$

$y_1^r + r y_1^{r-1} + r^2 y_1 + 1 = 1 - x - x^r$

$(y_1 + 1)^r = (y_1 + 1)^r$

$y_1 + 1 = y_2 + 1 \Rightarrow \boxed{y_1 = y_2}$

$\boxed{= 1}$

$f(x) = \frac{x^r + r x + a}{x^r + r x + v} = \frac{(x+r)^r + 1}{(x+r)^r + r}$

سؤال 9

$f'(\sqrt{r}-r) = \frac{(\sqrt{r}-r+r)^r + 1}{(\sqrt{r}-r+r)^r + r} = \frac{r}{r} = \frac{r}{r}$

$x^r + a x + b \rightarrow -1 - a + b = -r$

$\boxed{b = -r}$ $f(x) = x^r + x - r$

$y - r x + a = 0 \rightarrow y + r + a = 0 \quad \boxed{a = 1}$

$y = r x - 1$

$x^r + x - r = r x - 1 \rightarrow x^r - r x - 1 = 0$

$(x+1)(x^r - x - 1) = 0$

$\Delta = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{1 \pm \sqrt{1+r}}{r}$

$\rightarrow \text{مجموع} = \frac{1 + \sqrt{1+r} + 1 - \sqrt{1+r}}{r} = \frac{2}{r}$

$a + b = r a = -a - r b + 1$

$r a = -a + 1$

سؤال 9

$a + b = r a \rightarrow \boxed{a = b}$

$r a = 1 \rightarrow \boxed{a = \frac{1}{r}}$

$\frac{r x^r - a x + c + 1}{b x + r} = x$

$r x^r - a x + c + 1 = b x^r + r x$

سؤال 10

$\boxed{c = -1}$

$-a = r \rightarrow \boxed{a = -r}$

$\boxed{b = r}$

$a + b + c = -r + r - 1 = 0$