

$$1- \sqrt{5} \left(\frac{\sqrt{45} + \sqrt{15}}{\sqrt{3}} - \frac{\sqrt{75} + 3}{\sqrt{5}} \right) = ? = \sqrt{5} \left(\sqrt{15} + \sqrt{5} - \sqrt{15} + \frac{3}{\sqrt{5}} \right) = 5 - 3 = \underline{2}$$

$$2- \frac{1}{1-2\sqrt{x}} = 3 \quad x = ? \quad 3 - 6\sqrt{x} = 1 \rightarrow 6\sqrt{x} = 2 \rightarrow \sqrt{x} = \frac{1}{3} \rightarrow x = \frac{1}{9}$$

$$3- p(x) = ax^2 - 28x + 12a$$

$$p(b) = p(6b) = 0 \quad (a+b) = ?$$

$b, 6b \rightarrow$ ریشه‌های تابع

$$\begin{cases} S(\text{جمع ریشه‌ها}) = -b = \frac{28}{a} \rightarrow a \cdot b = 4 \rightarrow a = \frac{4}{\sqrt{2}} = 2\sqrt{2} \\ P(\text{ضرب ریشه‌ها}) = 6b^2 = 12 \rightarrow b^2 = 2 \rightarrow b = \sqrt{2} \end{cases} \rightarrow a+b = 3\sqrt{2}$$

$$4- \begin{aligned} 2a &= b \\ 2b &= c - 6 \\ d &= ? \end{aligned} \quad \begin{aligned} a \cdot c &= 54 \xrightarrow{a = \frac{b}{2}, c = 2b+6} \frac{b}{2} \cdot (2b+6) = 54 \rightarrow b^2 + 3b = 54 \rightarrow b = 6 \\ a \cdot b &= d \\ 3 \cdot 6 &= d = \underline{18} \end{aligned} \rightarrow a = 3$$

$$5- \begin{aligned} & \begin{array}{r} 2 \quad 3 \\ K \overline{) 6} \\ \times M = 2/4/6/8 \\ \hline 5 \text{ ممتد } 8 \\ \hline \end{array} \\ & \begin{array}{l} 7+3+8 \text{ (18)} \\ K+L+M=? \end{array} \end{aligned}$$

عدد 4 رقیبی با هزارگان 5

$$\begin{aligned} m=6 & \rightarrow 6 \cdot L + 3 = \text{یکان} \rightarrow 6 \rightarrow L=3 \rightarrow 8 \cdot K + 2 = 58 \rightarrow K=7 \checkmark \\ m=8 & \rightarrow 8 \cdot L + 4 = \text{یکان} \rightarrow 8 \rightarrow L=8 \end{aligned}$$

$$6- \begin{aligned} ||x| - |y|| &= 5|x| \\ |y - x| &= 5 \\ x \cdot y &=? \end{aligned}$$

غلطی زیر اجابت قدر مطلق نمی تواند منفی باشد

$$\begin{aligned} |x| - |y| &= 5|x| \rightarrow |y| = 4|x| \\ |x| - |y| &= -5|x| \rightarrow |y| = 6|x| \end{aligned}$$

$$\rightarrow |5|x|| = 5 \rightarrow x=1, y=6$$

$$\rightarrow x \cdot y = \underline{6}$$

7- $(x + 2y)^2 = 4xy + 9$

$2x^2 - 3y^2 = 7$

$x^2 + y^2 = ?$

~~$x^2 + 4y^2 + 4x \cdot y = 4y \cdot y + 9$~~

$(x^2 + 4y^2 = 9) \cdot (-2)$

$2x^2 - 3y^2 = 7$

$\rightarrow -11y^2 = -11 \rightarrow y^2 = 1 \rightarrow x^2 = 5$

9-
$$\begin{array}{r} 2AB \mid 5 \\ \hline x \\ \hline 4 \end{array}$$

$$\begin{array}{r} 2AB \mid 8 \\ \hline y \\ \hline 4 \end{array}$$

$$\begin{array}{r} 2AB \mid 9 \\ \hline z \\ \hline 5 \end{array}$$

A.B=?

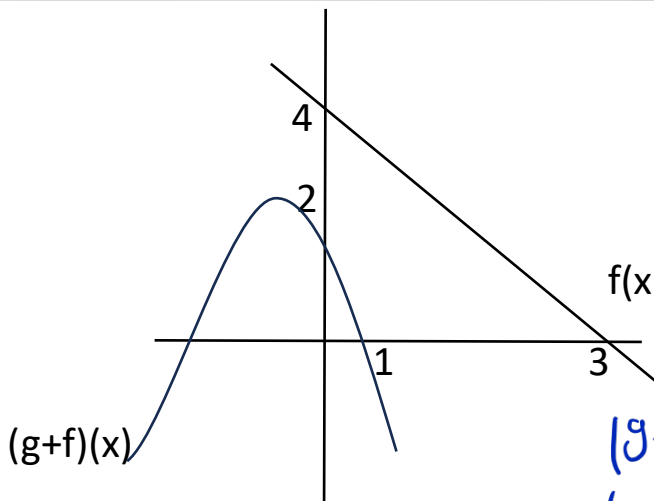
$2AB = 5x + 4 \rightarrow B = \{4, 9\}$

$2AB = 8y + 4 \rightarrow B \neq 9 \rightarrow \underline{B = 4}$

$2AB = 9z + 5 \rightarrow 2 + A - 1 + 9 = 9z \rightarrow 9z = A + 10 \rightarrow \underline{A = 8}$

$\rightarrow \underline{A \cdot B = 32}$

10-



$g(x) = ax^2 + ax + b$

$a = ?$

$f(0) = 4$

$f(x) = -\frac{4}{3}x + 4 \rightarrow f(1) = \frac{8}{3}$

$(g+f)(0) = 2 \rightarrow b + 4 = 2 \rightarrow b = -2$

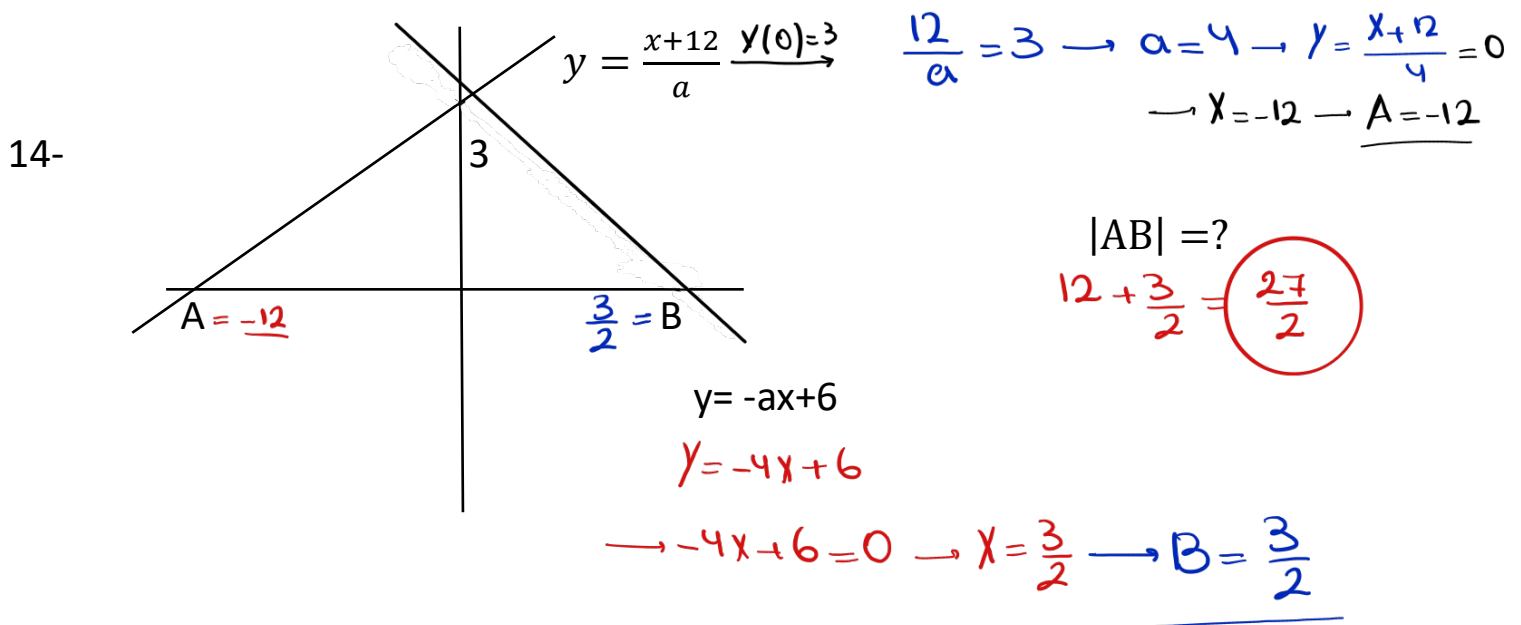
$(g+f)(1) = 0 \rightarrow 2a - 2 + \frac{8}{3} = 0$

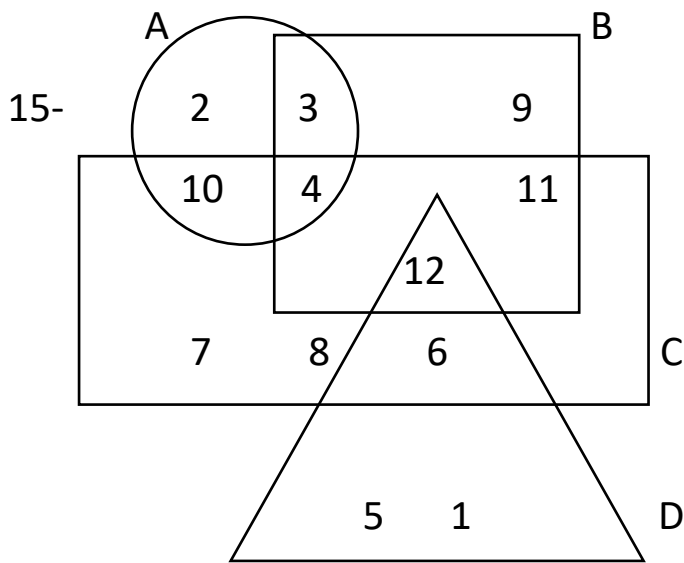
$\rightarrow 2a = -\frac{2}{3} \rightarrow a = -\frac{1}{3}$

11- $f(x) = x+3$ $f(f(a)) = a+6 = 13 \rightarrow \underline{a=7}$
 $f(x-3) = x$ $g(x) = 2x+1$ $a=?$
 $g(6) = 13$

12- $3b+ac=18$
 $3a+bc=18$
 $2c+ab=12$ $\xrightarrow{c=3} a \cdot b = 6 \rightarrow a \cdot b \cdot c = 6 \cdot 3 = \underline{18}$
 $a \cdot b \cdot c = ?$
 $3b+ac=3a+bc$
 $3(b-a)-c(b-a)=0 \rightarrow (b-a)(3-c)=0$
 $c=3$

13- $A \cdot B \cdot C < A \cdot B < 0 < A^2 \cdot B^2 < A \cdot B^2$
 $? < ? < ?$
 $\rightarrow \underline{B < A < C}$
 $A \cdot B \rightarrow$ مثبت
 $A \cdot B^2 \rightarrow$ مثبت
 $A \cdot B^2 > A^2 \cdot B \rightarrow A > A^2 \rightarrow 0 < A < 1$
 $A \cdot B \rightarrow$ مثبت
 $A \cdot B^2 \rightarrow$ مثبت
 $A \cdot B^2 > A^2 \cdot B \rightarrow A > A^2 \rightarrow 0 < A < 1$





$$X = \{7, 8, 9, 11\} \rightarrow X = ?$$

(BUC) / (AUD)

16- $f(x) = 2x - 1$

$$g(x) = -3x + 4$$

$\text{fog}(0) + \text{gof}(1) = ?$ $7 + 1 = 8$

17-

$$\frac{(x+4)(x+3)}{x^2+7x+12} \cdot \frac{x(x^2+8x+7)}{x^3+6x^2-7x} = ? \quad \left(\frac{x+3}{x+1} \right)$$

18- $2^{4x-10} \cdot 5^{2y+1} = 500$ $x + y = ?$

$$5 \cdot 10^2 \rightarrow 5^3 \cdot 2^2$$

$$\rightarrow 4x - 10 = 2 \rightarrow x = 3$$

$$\rightarrow 2y + 1 = 3 \rightarrow y = 1$$

$$x + y = 4$$

19- $\frac{\frac{4}{7} + \frac{4}{3}}{\frac{11}{3} \cdot \frac{8}{5}} = ?$

$$\frac{\frac{12+44}{33}}{\frac{56}{15}} = \left(\frac{5}{11} \right)$$

$$20- \frac{x+1}{2} - \frac{x+1}{4} \leq \frac{2}{x-6}$$

$$\frac{2x+2-x-1}{4} \leq \frac{2}{x-6} \rightarrow \frac{x+1}{4} \leq \frac{2}{x-6}$$

$$\max(x)=?$$

$$x^2 - 5x - 6 = 8$$

$$x^2 - 5x - 14 = 0$$

$$(x-7)(x+2)$$

$$x=7 \quad x=-2$$

با عدد دادن به بازه میزنیم $x \leq 7 \rightarrow \max(x) = 7$

$$21- x^8 + 2x^6 - x^4 - 2x^2 + a + 4$$

$$(x^2)^4 + 2(x^2)^3 - (x^2)^2 - 2x^2 + a + 4$$

$$x^2 + 2 = 0$$

$$a=?$$

$$x^2 = -2$$

$$16 - 16 - 4 + a + 4 = 2 \rightarrow a = 2$$

$$22- \frac{10! - 2.8!}{6!.7 + 4.6!} = ?$$

$$\frac{8! (90-2)}{56}$$

$$6! (7+4)$$

$$\frac{(56)(88)}{11}$$

$$= 448$$

