



www.riazisara.ir **سایت ویژه ریاضیات**

درسنامه ها و جزوه های دروس ریاضیات

دانلود نمونه سوالات امتحانات ریاضی

نمونه سوالات و پاسخنامه کنکور

دانلود نرم افزارهای ریاضیات

...

کانال سایت ریاضی سرا در تلگرام:

<https://telegram.me/riazisara>

[@riazisara](https://t.me/riazisara)

$$g \circ f^{-1} = g^{-1} \circ f \rightarrow (f^{-1}(a), 8) \in g^{-1} \rightarrow (8, f(a)) \in g \quad (126)$$

$$g(x) = \sqrt{5x+9} \rightarrow g(8) = \sqrt{49} \rightarrow g(8) = 7 \rightarrow f(a) = 7 \rightarrow (a, 7) \in f^{-1} \rightarrow (7, a) \in f$$

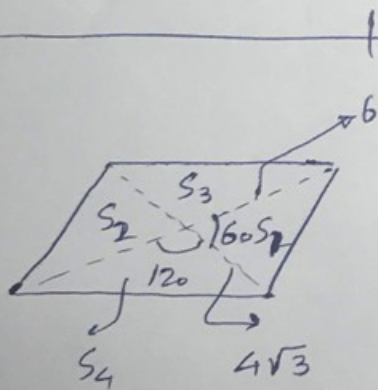
$$\rightarrow \boxed{a=3}$$

$$3^{2x+y} = 3^2 \times 3^{x-y} \rightarrow 2x+y = 2+x-y \rightarrow \boxed{x=2-2y} \quad (I)$$

$$\log(x+2y) = 1 + \log y \rightarrow \log(2-2y+2y) = 1 + \log y \rightarrow \log 2 - 1 = \log y \rightarrow$$

$$\log 2 - \log 10 = \log y \rightarrow \log \frac{2}{10} = \log y \rightarrow \boxed{y = \frac{1}{5}} \quad \text{بهر دو طرف لگاریتم بگیریم}$$

$$x = 2 - 2 \times \frac{1}{5} \rightarrow x = 2 - \frac{2}{5} \rightarrow x = \frac{8}{5} = 1.6$$



$$S_1 = S_2 \rightarrow \frac{1}{2} \times 6 \times 4\sqrt{3} \times \sin 60^\circ = 18 \quad (128)$$

$$S_3 = S_4 \rightarrow \frac{1}{2} \times 6 \times 4\sqrt{3} \times \sin(120^\circ) = 18$$

$$S_1 + S_2 + S_3 + S_4 = 4 \times 18 = \underline{72}$$

$$\det(A) = -14 + 12 = -2 \rightarrow A^{-1} = \frac{1}{-2} \begin{bmatrix} -2 & -3 \\ 4 & 7 \end{bmatrix} \quad (129)$$

$$2A^{-1} = \begin{bmatrix} +2 & +3 \\ -4 & -7 \end{bmatrix}$$

$$(B)(2A^{-1}) = \begin{bmatrix} 2 & 3 \\ 1 & 4 \end{bmatrix} \begin{bmatrix} 2 & 3 \\ -4 & -7 \end{bmatrix} = \begin{bmatrix} -8 & -15 \\ -14 & -25 \end{bmatrix}$$

توجه فرمایید یا توجه ساز یا توجه کنید

$$\frac{\binom{5}{1}\binom{5}{2} + \binom{3}{2}\binom{7}{1} + \binom{2}{2}\binom{8}{1}}{\binom{10}{3}} = \frac{21 + 8 + 50}{120} = \frac{79}{120}$$

133) می بینیم که در جدول زیر ستاره ها
 به رنگ قرمز درج شده اند.
 به رنگ قرمز درج شده اند (3) خدای سبحان

$$\cos\left(\frac{\pi}{4}-\alpha\right) - \cos\left(\frac{\pi}{4}+\alpha\right) = \cos\left(\frac{\pi}{2} - \left(\frac{\pi}{4}+\alpha\right)\right) - \cos\left(\frac{\pi}{4}-\alpha\right) \rightarrow$$

(134)

$$\sin\left(\frac{\pi}{4}+\alpha\right) - \cos\left(\frac{\pi}{4}+\alpha\right) = \sqrt{2} \sin\left(\left(\frac{\pi}{4}+\alpha\right) - \frac{\pi}{4}\right) = \sqrt{2} \sin(\alpha)$$

$$\cos \alpha = \frac{\sqrt{7}}{3} \rightarrow 1 - \cos^2 \alpha = \sin^2 \alpha \rightarrow \sin^2 \alpha = 1 - \frac{7}{9} \rightarrow \sin \alpha = \pm \frac{\sqrt{2}}{3}$$

$$\boxed{\sin \alpha = -\frac{\sqrt{2}}{3}}$$

$$\rightarrow \sqrt{2}x - \frac{\sqrt{2}}{3} = -\frac{2}{3}$$

$$g(x) = \frac{1-3x}{x+2}$$

$$f(x) = \frac{2x+3}{2-x}$$

(135)

$$g(f(x)) \rightarrow \text{مجموعه مقادیر } f(x) \text{ را در } g \text{ قرار دهیم}$$

$$g(f(x)) = \frac{1 - 3\left(\frac{2x+3}{2-x}\right)}{\left(\frac{2x+3}{2-x}\right) + 2} \rightarrow g(f(x)) = \frac{1 - \frac{6x+9}{2-x}}{\frac{2x+3}{2-x} + 2} \rightarrow$$

$$g(f(x)) = \frac{\frac{2-x-6x-9}{2-x}}{\frac{2x+3+4-2x}{2-x}} \rightarrow g(f(x)) = \frac{-7x-7}{7} \rightarrow \boxed{g(f(x)) = -x-1}$$

$$\lim_{x \rightarrow -1} \left(\frac{2}{x^2-1} - \frac{x}{x+1} \right) \rightarrow \infty - \infty \rightarrow \text{مخرج مشترک بزنیم}$$

(136)

$$\lim_{x \rightarrow -1} \frac{2}{(x-1)(x+1)} - \frac{x}{x+1} = \lim_{x \rightarrow -1} \frac{2 - x(x-1)}{(x-1)(x+1)} = \lim_{x \rightarrow -1} \frac{-x^2 + x + 2}{x^2 - 1} = \frac{0}{0} \xrightarrow{\text{Hop}}$$

$$= \lim_{x \rightarrow -1} \frac{-2x+1}{2x} = \frac{3}{-2} = -\frac{3}{2}$$

$$\lim_{x \rightarrow 1^+} f(x) = f(1)$$

ساده است (137)

$$\lim_{x \rightarrow 1} \frac{x-1}{x-\sqrt{x}} = \frac{0}{0} \rightarrow \lim_{x \rightarrow 1} \frac{x-1}{\sqrt{x}(\sqrt{x}-1)} = \lim_{x \rightarrow 1} \frac{(\sqrt{x}-1)(\sqrt{x}+1)}{(\sqrt{x})(\sqrt{x}-1)} = \frac{2}{1} = 2$$

$$\Rightarrow a. f(1) = 2 \rightarrow a - a + 2 = 2 \rightarrow \text{به دنبال جواب در این سوالات}$$

$$\frac{\cos x - \sin x}{\cos x + \sin x} \xrightarrow{\text{قسمت‌ها را بر } \frac{1}{\sqrt{2}} \text{ ضرب کنیم}} \frac{1 - \tan x}{1 + \tan x} = \tan\left(\frac{\pi}{4} - x\right)$$

(138)

$$y = \tan\left(\frac{\pi}{4} - x\right) \rightarrow y' = (-1) \left(1 + \tan^2\left(\frac{\pi}{4} - x\right)\right) \xrightarrow{x = \frac{\pi}{4}} y' = -1$$

$$P(A) = 0.84$$

$$P(B) = 0.75 \rightarrow P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

(139)

$$\rightarrow P(A \cup B) = 0.84 + 0.75 - (0.84 \times 0.75) = \underline{0.96}$$

$$\binom{4}{3} \left(\frac{1}{4}\right)^3 \left(\frac{3}{4}\right) = \underline{\frac{3}{64}}$$

(140)

$$f(x) = \frac{x+4}{x-2} \rightarrow yx - 2y = x + 4 \rightarrow yx - x = 2y + 4 \rightarrow x(y-1) = 2y+4$$

$$x = \frac{2y+4}{y-1} \rightarrow \boxed{y' = \frac{2x+4}{x-1}}$$

$$\frac{x+4}{x-2} = \frac{2x+4}{x-1} \rightarrow x^2 + 3x - 4 = 2x^2 + 4x - 4x - 8 \rightarrow x^2 + 3x - 4 = 0 \rightarrow$$

$$(x-4)(x+1) \rightarrow * \begin{cases} x = -1 \\ x = 4 \end{cases} *$$

(142)

$$-\frac{1}{4}, -\frac{1}{3}, \frac{1}{2}, 1$$

$$\frac{1}{2}, \frac{9}{8}, \frac{1}{8}$$

فرستاده
فرستاده (2)
فرستاده (4)

$$\ln(x-4y) = 2\ln 2 \rightarrow x-4y=4 \rightarrow \boxed{x=4+4y} \quad (I)$$

(143)

$$\ln(y+x-1) \times \ln(2y+3) = 0 \rightarrow \ln(y+x-1)(2y+3) = 0 \rightarrow (y+x-1)(2y+3) = 1$$

$$\xrightarrow{I} (y+4+4y-1)(2y+3) = 1 \rightarrow (5y+3)(2y+3) = 1 \rightarrow \boxed{y = -\frac{1}{2}}$$

$$\xrightarrow{I} x = 4 + 4(-\frac{1}{2}) \rightarrow \boxed{x = 2}$$

$$\boxed{xy = -1}$$

$$\sin 2x + \cos(\frac{\pi}{2} - x) = 0 \rightarrow \sin 2x + \sin x = 0 \rightarrow 2\sin(\frac{3x}{2})\cos(\frac{x}{2}) = 0 \quad (144)$$

$$\sin \frac{3x}{2} = 0 \rightarrow \frac{3x}{2} = k\pi \rightarrow \boxed{x = \frac{2k\pi}{3}} \rightarrow 0, \frac{2\pi}{3}, \frac{4\pi}{3}, 2\pi$$

$$\cos \frac{x}{2} = 0 \rightarrow \frac{x}{2} = k\pi + \frac{\pi}{2} \rightarrow \boxed{x = 2k\pi + \pi} \rightarrow \boxed{x = \pi}$$

$$\boxed{\text{مجموع جوابها} = 5\pi}$$

دانلود از سایت ریاضی سرا
www.riazisara.ir

$$x^2y - 2x\sqrt{y} = 8 \rightarrow x^2y - 2x\sqrt{y} - 8 = 0 \rightarrow$$

(145)

$$f' = -\frac{f'_x}{f'_y} \rightarrow f'_{cm} = -\frac{2xy - 2\sqrt{y}}{x^2 - 2x \times \frac{1}{2\sqrt{y}}} \xrightarrow{(2,4)} m = -\frac{16-4}{4-1}$$

$$\rightarrow m = y' = -\frac{12}{3} \rightarrow \boxed{m = -4}$$

$$y-4 = -4(x-2) \rightarrow \boxed{y+4x = 12}$$

146
 محضار تصدیق
 در صورتی که
 در صورتی که
 در صورتی که
 در صورتی که

$$y = ax^3 + bx^2 - 3x - 1 \xrightarrow{(b-2)} -2 = a(1)^3 + b(1)^2 - 3(1) - 1 \rightarrow$$

$$-2 = a + b - 4 \rightarrow \boxed{a + b = 2} \quad (I)$$

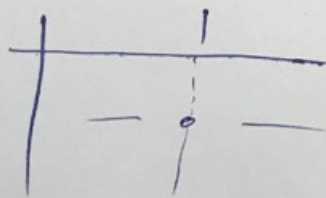
$$y' = 3ax^2 + 2bx - 3$$

$$y'' = 6ax + 2b \xrightarrow{f''(1)=0} 6a + 2b = 0 \rightarrow 6a = -2b \rightarrow \boxed{3a = -b}$$

$$\xrightarrow{(I)} a - 3a = 2 \rightarrow -2a = 2 \rightarrow \boxed{a = -1}, \boxed{b = 3}$$

$$y = -x^3 + 3x^2 - 3x - 1 \rightarrow y' = -3x^2 + 6x - 3 \rightarrow y' = -3(x^2 - 2x + 1) \rightarrow$$

$$y' = -3(x-1)^2 \rightarrow$$



در صورتی که
 در صورتی که
 در صورتی که
 در صورتی که

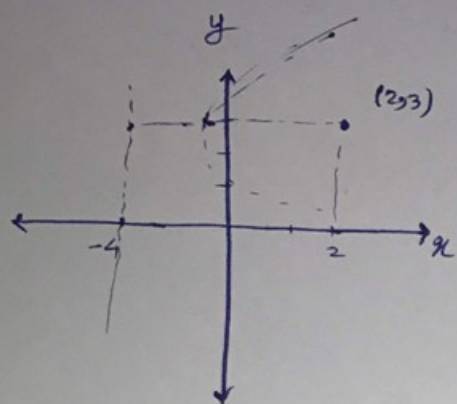
147

$$\boxed{b = 0}$$

در صورتی که
 در صورتی که
 در صورتی که
 در صورتی که

$$\frac{2 + a(2)^2}{2} = 0 \rightarrow 4a + 2 = 0 \rightarrow \boxed{a = -\frac{1}{2}}$$

$$* \boxed{a - b = -\frac{1}{2}} *$$



$$2p = 6 \rightarrow p = 3 \rightarrow S(-1, 3)$$

$$(y-3)^2 = 12(x+1) \xrightarrow{y=0} 9 = 12(x+1) \rightarrow$$

$$x+1 = \frac{9}{12} \rightarrow x+1 = \frac{3}{4} \rightarrow x = -\frac{1}{4}$$

$$S(1, 0)$$

149 دایره به مرکز (1, 0) و شعاع 2

$$2c = 2 \rightarrow c = 1$$

$$c = \frac{c}{a} \rightarrow c = \frac{1}{2} \rightarrow \frac{1}{2} = \frac{1}{a} \rightarrow a = 2$$

$$a^2 = b^2 + c^2 \rightarrow 4 = b^2 + 1 \rightarrow b = \sqrt{3}$$

$$\frac{(y-b)^2}{a^2} + \frac{(x-a)^2}{b^2} = 1 \rightarrow \frac{(y)^2}{4} + \frac{(x-1)^2}{3} = 1 \xrightarrow{y=2m}$$

$$\frac{(2x)^2}{4} + \frac{(x-1)^2}{3} = 1 \rightarrow \frac{4x^2}{4} + \frac{(x-1)^2}{3} = 1 \rightarrow x^2 + \frac{(x-1)^2}{3} = 1 \rightarrow$$

$$3x^2 + x^2 - 2x + 1 = 3 \rightarrow 4x^2 - 2x - 2 = 0 \rightarrow 2x^2 - x - 1 = 0 \rightarrow (2x+1)(x-1) = 0$$

$$(x-1)$$

$$\boxed{x = -\frac{1}{2}} \text{ و } \boxed{x = 1}$$

$$\int_0^6 |x-2| dx = \int_0^2 (2-x) dx + \int_2^6 (x-2) dx$$

$$2x \Big|_0^2 - \frac{x^2}{2} \Big|_0^2 + \frac{x^2}{2} \Big|_2^6 - 2x \Big|_2^6$$

$$(4-0) - (2-0) + (18-2) - (12-4) - (12-0) =$$

$$4 - 2 + 16 - 8 - 12 = -2$$

$$\int \frac{x-1}{x^3} dx = \frac{1}{2x^2} f(x) + C$$

$$\int \frac{x-1}{x^3} dx = \int \frac{1}{x^2} dx - \int \frac{1}{x^3} dx = \int x^{-2} dx - \int x^{-3} dx \rightarrow$$

$$\frac{x^{-1}}{-1} - \frac{x^{-2}}{-2} + C \rightarrow \frac{-1}{x} + \frac{1}{2x^2} =$$

$$\rightarrow \frac{-2x+1}{2x^2} + C \rightarrow \frac{f(x)}{2x^2} + C \rightarrow \boxed{f(x) = 1 - 2x}$$