



سایت ویژه ریاضیات www.riazisara.ir

درسنامه ها و جزوه های ریاضی

سوالات و پاسخنامه تشریحی کنکور

نمونه سوالات امتحانات ریاضی

نرم افزارهای ریاضیات

و...

کانال سایت ریاضی سرا در تلگرام:

<https://t.me/riazisara>



(@riazisara)

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دانش سرچشمه آزمون تجربی

$$\begin{cases} \Delta > 0 \\ \alpha \beta > 0 \\ \alpha + \beta < 0 \end{cases} \rightarrow \begin{cases} m^2 + 3(m-6) > 0 \\ -\frac{3}{m-6} > 0 \\ \frac{2}{m-6} < 0 \end{cases}$$

$$3 < m < 6$$

تجزیه

$$\frac{\sin(n - \frac{\pi}{4})}{\sin(n + \frac{\pi}{4})} = \frac{\sin n \cos \frac{\pi}{4} - \cos n \sin \frac{\pi}{4}}{\sin n \cos \frac{\pi}{4} + \cos n \sin \frac{\pi}{4}} = 2 \Rightarrow$$

$$\sin n = -3 \cos n \Rightarrow \tan n = -3$$

$$2x - 3 = t \Rightarrow x = \frac{t+3}{2}$$

$$f(t) = (t+3)^2 - 7(t+3) + 13 = t^2 - t + 1$$

$$f(x) = x^2 - x + 1$$

$$\lim_{n \rightarrow 4} \frac{3x^2 - 10x - 8}{\sqrt{3-x} - 1} \stackrel{\text{Hop}}{=} \lim_{n \rightarrow 4} \frac{6x-10}{-\frac{1}{2\sqrt{x}}} = -112$$

تجزیه (ساده)

$$3a + 2^0 = a \log_2 4 \Rightarrow 3a + 1 = 2a \Rightarrow a = -1$$

$$f(2) = -(2) + 2^{-1} = -2 + \frac{1}{2} = -\frac{3}{2}$$

$$f(x) = (\sin^2 x + \cos^2 x)^2 - 2 \sin x \cos x$$

$$f(x) = 1 - \frac{1}{2} \sin 2x \Rightarrow$$

$$f'(x) = -\sin 2x \Rightarrow f'(\frac{\pi}{8}) = -1$$

$$\binom{5}{4} (\frac{3}{4})^4 (\frac{1}{4}) + \binom{5}{5} (\frac{3}{4})^5 = \frac{81}{128}$$

تجزیه

$$x \leftrightarrow y : 3x - 2y = 4 \xrightarrow{x=0} y = -2$$

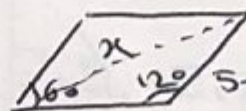
تجزیه (ساده)

$$-x^2 - \frac{1}{2}x + \frac{9}{2} > 2x + |x| \xrightarrow{x^2}$$

$$-2x^2 - x + 9 > 4x + 2|x|$$

$$\begin{cases} x > 0 : 2x^2 + 7x - 9 < 0 \Rightarrow 0 < x < 1 \\ x < 0 : 2x^2 + 3x - 9 < 0 \Rightarrow -3 < x < 0 \end{cases}$$

$$-3 < x < 1 \Rightarrow x = \frac{-3+1}{2} = -1$$



$$x^2 = a^2 + b^2 - 2ab \cos \alpha \Rightarrow x^2 = 5^2 + 6^2 - 2 \cdot 5 \cdot 6 \cdot \cos 120^\circ$$

$$\Rightarrow x^2 = 81 \Rightarrow x = 9$$

$$A^2 = \begin{bmatrix} -1 & 2 \\ 3 & 4 \end{bmatrix} \begin{bmatrix} -1 & 2 \\ 3 & 4 \end{bmatrix} = \begin{bmatrix} 7 & 6 \\ 9 & 22 \end{bmatrix}$$

$$\rightarrow \text{مجموع اجزاء} = 7 + 6 + 9 + 22 = 44$$

$$2 \times 7 + 5 \times 12 + 8 \times 17 + 22a + 27x$$

$$= 18(a + 2 + 5 + 8 + 4) \Rightarrow a = 6$$

$$\Rightarrow n = 2 + 5 + 8 + 6 + 4 = 25 \Rightarrow$$

$$\frac{6}{25} \times 100 = 24$$

$$\frac{6}{100} = \frac{d}{25} \Rightarrow d = 1.5 \Rightarrow d^2 = 2.25$$

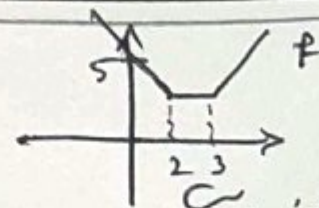
$$\text{مساحت} = (25)^2 + 2 \cdot 2.25 = 627.25$$

$$P(A) = \frac{n(A)}{n(S)} = \frac{9}{36} = \frac{1}{4}$$

تجزیه

کتابچه تشریح کندهنریه (ریاضی) - نورانی - تهران - شماره ۲ - سراسر

$$m = -\frac{\frac{14x}{2\sqrt{\dots}}}{\frac{-2}{2\sqrt{\dots}} + 2y} \xrightarrow{x=1, y=3} m = -\frac{7}{5} \xrightarrow{\frac{140}{14}} m' = \frac{5}{7}$$



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گزینه ۱

$x < 2 \Rightarrow P \Rightarrow$ ابتدا نزول است

$$P(x) = 2 - x + 3 - x = 5 - 2x$$

$$P(x) = g(x) \Rightarrow 2x^2 - x - 10 = 5 - 2x \Rightarrow 2x^2 + x - 15 = 0 \Rightarrow \begin{cases} x = -3 \\ x = \frac{5}{2} \end{cases}$$

$$f'(x) = \frac{4}{3}x^{\frac{1}{3}} - \frac{4}{3}x^{-\frac{2}{3}} = \frac{4}{3}x \frac{x-1}{\sqrt[3]{x^2}}$$

$$f''(x) = \frac{4}{9}x \frac{x+2}{x\sqrt[3]{x^2}}$$

	-2	0	1
f'	-	-	+
f''	+	-	+

$\Rightarrow x \in (-2, 0)$ گزینه ۳

$$f(x) = m \Rightarrow x^3 - 6x^2 + 9x + 2 = m \Rightarrow$$

$$x^3 - 6x^2 + 9x + 2 - m = 0$$

$$f(x) = x^3 - 6x^2 + 9x + 2 - m \Rightarrow$$

$$h'(x) = 3x^2 - 12x + 9 = 0 \Rightarrow \begin{cases} x=1 \\ x=3 \end{cases}$$

$$\Rightarrow h(1)h(3) > 0 \Rightarrow (6-m)(2-m) > 0$$

$$\Rightarrow \frac{m}{\begin{matrix} 2 & 6 \\ + & - & + \end{matrix}} \Rightarrow m < 2 \text{ or } m > 6$$

$$\sqrt{(x-3)^2 + (y-6)^2} = 2\sqrt{x^2 + y^2}$$

$$x^2 + 2x + y^2 + 4y - 15 = 0 \Rightarrow$$

$$(x+1)^2 + (y+2)^2 = 20 \Rightarrow$$

$$r = 2r = 2\sqrt{20} = 4\sqrt{5}$$

$$\int_{-1}^5 f(x) dx = 9 \times 3 = 12$$

$$\int_1^4 \frac{2x^3 - \sqrt{x}}{x^2} dx =$$

$$= \int_1^4 (2x + x^{-\frac{3}{2}}) dx = 17 - 3 = 14$$

$$\frac{2}{2}, \frac{6}{11}, \frac{12}{26}, \dots$$

رابطه آرایه نزول است.

$$a_1 = 1, \lim_{n \rightarrow \infty} a_n = \frac{1}{3} \Rightarrow 1 - \frac{1}{3} = \frac{2}{3}$$

$$f(t) = 40 \Rightarrow e^{-0.25t} = \frac{2}{5}$$

$$\Rightarrow -0.25t = \ln \frac{2}{5} = -\ln \frac{5}{2} = -0.91$$

$$\Rightarrow -0.25t = -0.91 \Rightarrow$$

$$t = \frac{91}{25} = 3.64 \Rightarrow 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57, 60$$

$$\tan 3x \text{ دامنه } 1 \Rightarrow \tan 3x = \cot x$$

$$\Rightarrow \tan 3x = \tan(\frac{\pi}{2} - x) \Rightarrow 3x = k\pi + \frac{\pi}{2} - x$$

$$\Rightarrow x = \frac{k\pi}{4} + \frac{\pi}{8}$$

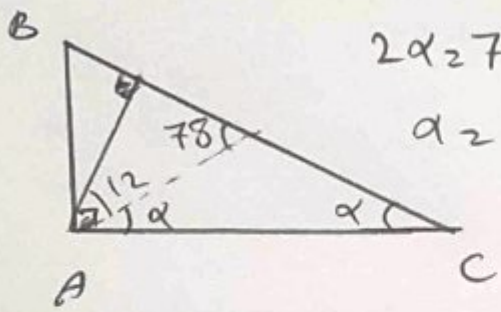
$$f'(x) = \begin{cases} 2ax + b & x \geq -2 \\ 3x^2 - 1 & x < -2 \end{cases}$$

$$\begin{cases} 4a - 2b + 4 = -8 + 2 \\ -4a + b = 12 - 1 \end{cases} \Rightarrow \begin{cases} a = -3 \\ b = -1 \end{cases}$$

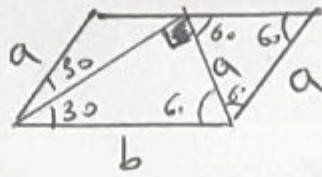
$$f(1) = -3 - 1 + 4 = 0$$

- $\frac{150}{3}$
- $\frac{102}{2}$
- $\frac{183}{3}$
- $\frac{101}{4}$

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گزینه ۴



$$2\alpha = 78 \Rightarrow \alpha = 39$$



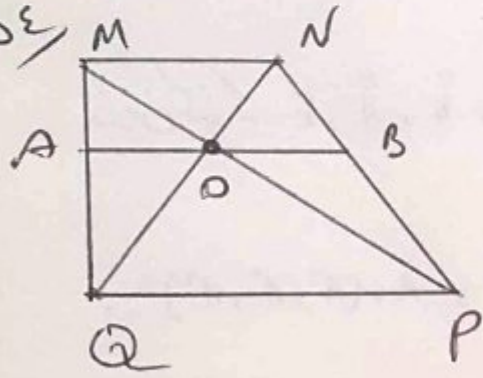
$$a = \frac{b}{2} \Rightarrow b = 2a$$

$$2(a+b) = 12\sqrt{3} \Rightarrow \begin{cases} a = 2\sqrt{3} \\ b = 4\sqrt{3} \end{cases}$$

$$S = ab \sin 60 = 2\sqrt{3} \times 4\sqrt{3} \times \frac{\sqrt{3}}{2} = 12\sqrt{3}$$

گزینه ۳

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$$\frac{OA}{MN} = \frac{OQ}{QN}, \quad \frac{OQ}{QN} = \frac{BP}{PN}, \quad \frac{BP}{PN} = \frac{OB}{MN} \Rightarrow$$

$$\frac{OA}{OM} = \frac{OB}{ON} \Rightarrow OA = OB$$

گزینه ۲

$$a\sqrt{2} = 8 \Rightarrow a = \frac{8}{\sqrt{2}} = 4\sqrt{2} \Rightarrow S = \frac{1}{2} \times 4\sqrt{2} \times 4\sqrt{2} \times 6 = 192$$

گزینه ۱

