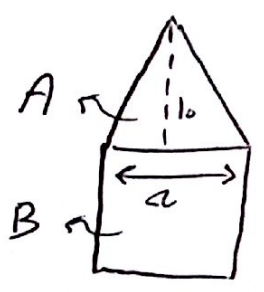


س ۱۰۱ - س ۱

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

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

س ۱۰۲ - س ۳



$$S_A = \frac{1}{2} \times 10 \times a = 5a$$

$$S_B = a^2$$

$$S_A = \frac{2}{3} S_B - \frac{1}{3}$$

$$5a = \frac{2}{3} a^2 - \frac{1}{3} \xrightarrow{\times 3} 15a - 2a^2 - 1 = 0$$

$$\Delta = 225 - 4(2)(-1) = 229 \quad x_{1,2} = \frac{15 \pm \sqrt{229}}{2} \quad \begin{cases} x_1 = 1 \quad \checkmark \\ x_2 = -\frac{1}{2} \quad \times \end{cases}$$

$$S_A = 1 \times 5 = 5$$

س ۱۰۳ - س ۴

$$\frac{2x-1}{x+2} - \frac{x-3}{x-2} - \frac{2}{3} = 0$$

$$\frac{3(2x+1)(x-2) - 3(x-3)(x+2) - 2(x-2)(x+2)}{3(x-2)(x+2)} = 0 \quad \frac{x^2 - 12x + 32}{3(x-2)(x+2)} = 0$$

$$(x-4)(x-1) = 0 \quad \rightarrow x_1 = 4, x_2 = 1 \quad \underline{4+1=12}$$

س ۱۰۴ - س ۲

$$D_f \cap D_g = \{1, 3, 8\}$$

$$\frac{f+g}{f-g} = \frac{\{(1, 7), (3, 6), (8, 9)\}}{\{(1, 3), (3, 2), (8, -3)\}} = \left\{ \left(1, \frac{7}{3}\right), (3, 2), (8, -3) \right\}$$

سوال 105 -

$$f(n) = \begin{cases} n \geq 0 & 1 \\ n < 0 & -1 \end{cases} \quad \begin{array}{l} n^2 - 2n - 2 = 1 \\ n^2 - 2n - 3 = 0 \\ n^2 - 2n - 2 = -1 \\ n^2 - 2n - 1 = 0 \end{array}$$

$$n^2 - 2n - 2 = 0 \rightarrow n = -1 \times \quad n = 3 \checkmark$$

$$n^2 - 2n - 1 = 0 \rightarrow n = 1 + \sqrt{2} \times \quad n = 1 - \sqrt{2} \checkmark$$

سوال 107 -

$$f\left(-\frac{3}{4}\right) = \left[2\left(-\frac{3}{4}\right) - 1\right] = \left[-\frac{3}{2}\right] = -3$$

$$f\left(\frac{\sqrt{8}}{4}\right) = \left[2\left(\frac{\sqrt{8}}{4}\right) - 1\right] = \left[\sqrt{2} - 1\right] = 1$$

$$-3 + 1 = -2$$

سوال 107 -

$$(a^2 + 4b)^3 = a^6 + 12a^4b + 48a^2b^2 + 64b^3$$

سوال 108 -

$$-\frac{1}{4}n^2 + 2n + b = 13 - n$$

$$\xrightarrow{n=2} \begin{cases} 2a + b = 13 \\ 8a + b = 24 \end{cases} \Rightarrow a = 4, b = 5$$

$$\xrightarrow{n=1} \begin{cases} 2a + b = 13 \\ 8a + b = 24 \end{cases}$$

$$y = -\frac{1}{4}n^2 + 4n + 5 \quad n = -\frac{b}{2a} = 4, y = 13 \Rightarrow (4, 13)$$

سوال 109 -

شخص بهای کالا و خدمات به واحد اندازه گیری بستگی ندارد.

سوال 110 -

$$m = \frac{22 - 20}{10 - 11} = \frac{2}{-1} = -2$$

$$y - 26 = -2(n - 10)$$

$$y = 2n - 4$$

$$f(9) = 2(9) - 4 = 14$$

سوال 111 -

$$B: \frac{40}{100} \times 360 = 144^\circ$$

سؤال ۱۱۲ - ۲

$$\frac{((P \Rightarrow Q) \wedge P)}{T \wedge T} \Rightarrow \sim P$$

$$T \Rightarrow F \Rightarrow F$$

بقیه گزینه‌ها درست است

سؤال ۱۱۳ - ۴

$$(A - C) \cup (A - B) = A \quad \times$$

سؤال ۱۱۴ - ۲

$$\frac{4}{4} \times \frac{3}{4} \times \frac{2}{4} \times \frac{1}{4} \times \frac{3}{4} = \frac{1}{16}$$

سؤال ۱۱۵ - ۳

$$P(A) = \frac{\binom{8}{2} \binom{4}{1}}{\binom{9}{3}} = \frac{10 \times 4}{14} = \frac{10}{7}$$

سؤال ۱۱۶ - ۲

$$12, 13, 14, 8, 18, 18, 8, 14, 11, 11, 8, 2.$$

↓ ↓ ↓

Q_1 Q_2 Q_3

$$\frac{14, 8 + 18 + 18, 8 + 14 + 11}{8} = 14$$

$$\sigma = \sqrt{\frac{(14)^2 + 1^2 + (14)^2 + 1^2 + 1^2}{8}} = \sqrt{\frac{14}{8}} = \sqrt{1.75} \approx 1.32$$

سؤال ۱۱۷ - ۳

$$9, 10, 12, 8, 13, 13, 14, 18, 14, 14, 14, 8$$

↓ ↓ ↓

Q_1 Q_2 Q_3

$$IQR = 14 - 12, 8 = 3, 8$$

118 - 15

$$S_n = \frac{a}{r} [ra_1 + (n-1)d] \rightarrow a_0 = \frac{a}{r} [ra_1 + rd]$$

$$9a_1 + 34d = 9. \quad (1)$$

$$a_n = a_1 + (n-1)d \rightarrow 13 = a_1 + 7d \rightarrow a_1 + 7d = 13 \quad (2)$$

$$(1), (2) \Rightarrow \begin{cases} 9a_1 + 34d = 9 \\ -9a_1 - 7d = -11 \end{cases} \quad \begin{array}{l} -11d = -25 \\ d = 1,8 \end{array}$$

119 - 35

$$S_n = a \frac{1-r^n}{1-r} = 8 \frac{1-(\frac{1}{2})^n}{1-\frac{1}{2}} = 12,8$$

120 - 15

$$a_1 = r, \quad a_2 = \frac{r}{1+r} = \frac{r}{3}, \quad a_3 = \frac{r}{1+\frac{r}{3}} = \frac{2}{8}$$

$$a_4 = \frac{r}{1+\frac{2}{8}} = \frac{1}{11}, \quad a_5 = \frac{r}{1+\frac{1}{11}} = \frac{22}{21}$$

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