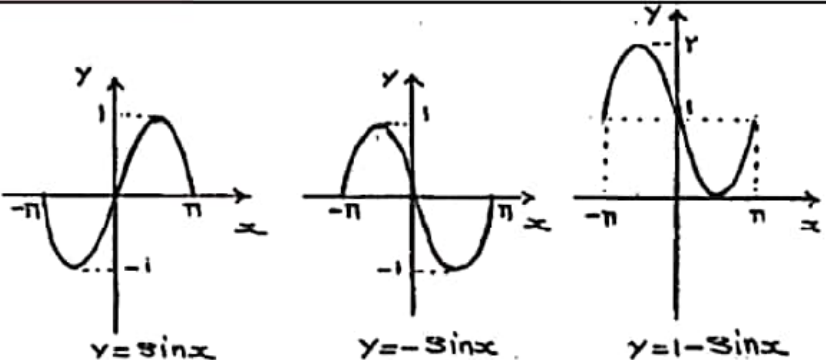




ردیف	راهنمای تصحیح	محل مهر یا امضا، مدیر
۱		$C \mid \begin{cases} x_c = \frac{2+6}{2} = 4 \\ y_c = \frac{-2+4}{2} = 1 \end{cases}, R = \sqrt{(6-4)^2 + (4-1)^2} = \sqrt{4+9} = \sqrt{13}$
۲		$a = \frac{ 6-0-1 }{\sqrt{4+1}} = \frac{5}{\sqrt{5}} = \sqrt{5} \rightarrow S = a^2 = 5$
۳		$\begin{cases} S = 1 + \sqrt{2} + 1 - \sqrt{2} = 2 \\ P = (1 + \sqrt{2})(1 - \sqrt{2}) = -1 \end{cases} \rightarrow x^2 - Sx + P = 0 \rightarrow x^2 - 2x - 1 = 0$
۴		$PQ \parallel BC \rightarrow \begin{cases} \frac{AP}{PB} = \frac{AQ}{QC} \rightarrow \frac{x}{6} = \frac{2}{3} \rightarrow x = 4 = AP \\ \frac{AQ}{AC} = \frac{PQ}{BC} \rightarrow \frac{2}{5} = \frac{y}{9} \rightarrow y = \frac{18}{5} = 3.6 = PQ \end{cases}$
۵		$BC^2 = AB^2 + AC^2 \rightarrow BC^2 = 64 + 36 = 100 \rightarrow BC = 10$ $AH \cdot BC = AB \cdot AC \rightarrow AH \times 10 = 8 \times 6 \rightarrow AH = 4.8$
۶	(الف) (ب)	$D_f = [-2, +\infty), D_g = \mathbb{R} - \{2\}, f(x) = 0 \rightarrow \sqrt{x+2} = 0 \rightarrow x = -2$ $D_{\frac{g}{f}} = D_f \cap D_g - \{x \mid f(x) = 0\} = [-2, 2) \cup (2, +\infty) - \{-2\} = (-2, 2) \cup (2, +\infty)$ $(2f - 2g)(-1) = 2f(-1) - 2g(-1) = 2(1) - 2\left(\frac{-1}{2}\right) = 4$
۷		$y = [x] + 2 \quad D_f = [-2, 1)$ $-2 \leq x < -1 \rightarrow y = -2 + 2 \rightarrow y = 0$ $-1 \leq x < 0 \rightarrow y = -1 + 2 \rightarrow y = 1$ $0 \leq x < 1 \rightarrow y = 0 + 2 \rightarrow y = 2$
۸		$L = r \cdot \theta \rightarrow 8 = 10 \times \theta \rightarrow \theta = \frac{4}{5} \text{ rad}$

$\text{الف) } \sin\left(\frac{7\pi}{4}\right) = \sin\left(\pi + \frac{\pi}{4}\right) = \sin\frac{\pi}{4} = \frac{\sqrt{2}}{2}$ $\text{ب) } \cos\left(\frac{7\pi}{4}\right) = \cos\left(\pi + \frac{\pi}{4}\right) = \cos\frac{\pi}{4} = \frac{\sqrt{2}}{2}$ $\text{پ) } \tan(135^\circ) = \tan(\pi - 45^\circ) = -\tan 45^\circ = -1$ $\text{ت) } \cot(225^\circ) = \cot(\pi + 45^\circ) = \cot 45^\circ = \frac{\sqrt{2}}{2}$	9
 $y = \sin x$ $y = -\sin x$ $y = 1 - \sin x$	10
$9^{2x-2} = 27^{x+1} \rightarrow 3^{6x-6} = 3^{3x+3} \rightarrow 6x - 6 = 3x + 3 \rightarrow 3x = 9 \rightarrow x = 3$	11
$\log_{\frac{1}{2}} 81 - 4 \log_{\frac{1}{2}} \frac{1}{25} + 7 \log_{\frac{1}{2}} \dots = \log_{2^{-1}} 2^6 - 4 \log_{2^{-1}} 2^{-2} + 7 \log_{2^{-1}} 2^{-2} = -6 + 8 - 21 = -19$	12
$\log_3(x+1) + \log_3(x-1) = 1 \rightarrow \log_3(x+1)(x-1) = 1 \rightarrow (x+1)(x-1) = 3 \rightarrow x^2 - 1 = 3$ $\rightarrow x^2 = 4 \rightarrow \begin{cases} x = 2 \text{ ق} \\ x = -2 \text{ غ} \end{cases}$	13
$f(x) = \begin{cases} -x+2 & x > 2 \\ -2 & x = 2 \\ x-2 & x < 2 \end{cases}$ $\lim_{x \rightarrow 2^+} f(x) = \lim_{x \rightarrow 2^+} (-x+2) = 0$ $\lim_{x \rightarrow 2^-} f(x) = \lim_{x \rightarrow 2^-} (x-2) = -1$ پس تابع در $x = 2$ حد ندارد	14
$\text{الف) } \lim_{x \rightarrow 2} \frac{x^2 - 2x}{x^2 - 2x + 2} = \lim_{x \rightarrow 2} \frac{x(x-2)}{(x-2)(x+1)} = \lim_{x \rightarrow 2} \frac{x}{x+1} = 2$ $\text{ب) } \lim_{x \rightarrow \frac{\pi}{2}} \frac{1 - \sin x}{\cos^2 x} = \lim_{x \rightarrow \frac{\pi}{2}} \frac{1 - \sin x}{1 - \sin^2 x} = \lim_{x \rightarrow \frac{\pi}{2}} \frac{1 - \sin x}{(1 - \sin x)(1 + \sin x)} = \lim_{x \rightarrow \frac{\pi}{2}} \frac{1}{1 + \sin x} = \frac{1}{2}$	15
$f(\cdot) = 2, \lim_{x \rightarrow 0^-} f(x) = \lim_{x \rightarrow 0^-} (-2x+2) = 2, \lim_{x \rightarrow 0^+} f(x) = \lim_{x \rightarrow 0^+} (x^2+2) = 2$ چون $f(\cdot) = \lim_{x \rightarrow 0^-} f(x) = \lim_{x \rightarrow 0^+} f(x) = 2$ پس تابع در $x = 0$ پیوسته است.	16

$$P(A) = \frac{1}{\Delta}, P(B) = \frac{1}{\gamma}, P(B|A) = \frac{1}{\tau}, P(A \cup B) = ?$$

$$P(B|A) = \frac{P(B \cap A)}{P(A)} \rightarrow \frac{1}{\tau} = \frac{P(B \cap A)}{\frac{1}{\Delta}} \rightarrow P(B \cap A) = \frac{1}{\tau \Delta}$$

$$P(A \cup B) = P(A) + P(B) - P(A \cap B) \rightarrow P(A \cup B) = \frac{1}{\Delta} + \frac{1}{\gamma} - \frac{1}{\tau \Delta} \rightarrow P(A \cup B) = \frac{41}{140}$$

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$$9, 11, 12, 13, 15$$

$$\bar{X} = \frac{\sum X_i}{n} = \frac{9 + 11 + 12 + 13 + 15}{5} = 12$$

$$\sigma^2 = \frac{\sum (X_i - \bar{X})^2}{n} = \frac{9 + 1 + 0 + 1 + 9}{5} = 4$$

$$\sigma = \sqrt{\sigma^2} = \sqrt{4} = 2, \quad CV = \frac{\sigma}{\bar{X}} = \frac{2}{12} = \frac{1}{6}$$

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