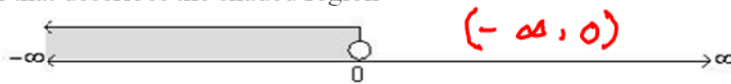
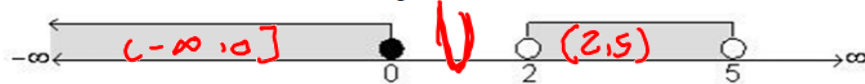


Q1: Choose the interval that describes the shaded region



- A) $(-\infty, 0)$ B) $(-\infty, 0]$ C) $(0, \infty)$ D) $[0, \infty)$

Q2: Choose the intervals that describe the shaded regions



- A) $(-\infty, 0) \cup [2, 5]$ B) $(-\infty, 0] \cup (2, 5)$ C) $(-\infty, 0) \cup [2, 5)$ D) $(-\infty, 0] \cup (2, 5]$

Q3: The solution set of the inequality $3x + 5 \leq 8$ is

Handwritten in red: $(-\infty, 1]$

- A) $(-\infty, 1)$ B) $(-\infty, 1]$ C) $[1, \infty)$ D) $(1, \infty)$

$3x \leq 8 - 5$

$\frac{3x}{3} \leq \frac{3}{3}$

$x \leq 1$

Handwritten in red: $(-\infty, 1]$

Q4: The solution set of the inequality $5x - 3 > 7 - 3x$ is

Handwritten in red: $(\frac{5}{4}, \infty)$

- A) $(-\infty, \frac{5}{4})$ B) $[\frac{5}{4}, \infty)$ C) $(\frac{5}{4}, \infty)$ D) $(-\infty, \frac{5}{4}]$

$5x + 3x > 7 + 3$

$8x > 10$

$\frac{8x}{8} > \frac{10}{8}$

$x > \frac{5}{4}$

Handwritten in red: $(\frac{5}{4}, \infty)$

Q5: The solution set of the inequality $2 < 3x - 4 \leq 5$ is

- A) $(2, 3)$ B) $[2, 3)$ C) $(2, 3)$ D) $[2, 3]$

$2 + 4 < 3x \leq 4 + 5$

$6 < 3x \leq 9$

$\frac{6}{3} < \frac{3x}{3} \leq \frac{9}{3}$

$2 < x \leq 3$

Handwritten in red: $(2, 3]$

Q6: The solution set of the inequality $x^2 < 9$ is

A) $(-\infty, -3) \cup (3, \infty)$

B) $[-3, 3]$

C) $(-\infty, -3] \cup [3, \infty)$

D) $(-3, 3)$

$$x^2 < 9 \quad \checkmark$$

$$\sqrt{x^2} < \sqrt{9}$$

$$|x| < 3 \rightarrow -3 < x < 3 \rightarrow (-3, 3)$$

Q7: The solution set of the inequality $x^2 \geq 9$ is

A) $(-\infty, -3) \cup (3, \infty)$

B) $[-3, 3]$

C) $(-\infty, -3] \cup [3, \infty)$

D) $(-3, 3)$

$$x^2 \geq 9 \quad \checkmark$$

$$\sqrt{x^2} \geq \sqrt{9}$$

$$|x| \geq 3$$

$$x \leq -3 \quad \text{or} \quad x \geq 3$$

$$(-\infty, -3] \cup [3, \infty)$$

Q8: The solution set of the inequality $x^2 - 2x \leq 0$ is

A) $(-\infty, 0) \cup (2, \infty)$

B) $(0, 2)$

C) $(-\infty, 0] \cup [2, \infty)$

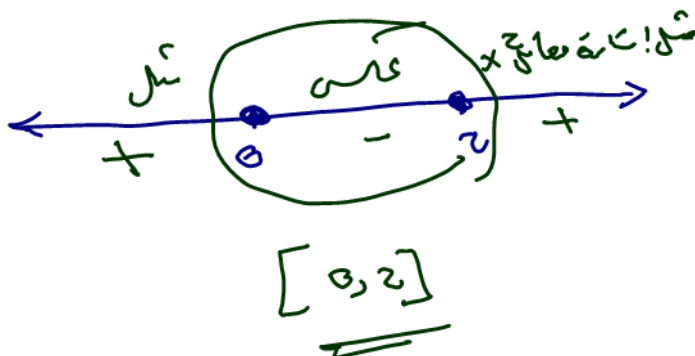
D) $[0, 2]$

$$x^2 - 2x = 0$$

$$x(x-2) = 0$$

$$x = 0 \quad | \quad x - 2 = 0$$

$$x = 2$$



Q9: The solution set of the inequality $x^2 - 8x + 12 > 0$ is

A) $(-\infty, 2) \cup (6, \infty)$

B) $(2, 6)$

C) $(-\infty, 3) \cup (4, \infty)$

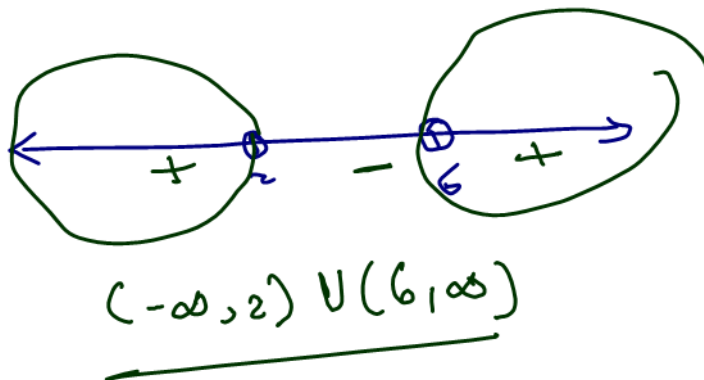
D) $[3, 4]$

$$x^2 - 8x + 12 = 0$$

$$(x-2)(x-6) = 0$$

$$x-2=0 \quad | \quad x-6=0$$

$$x=2 \quad | \quad x=6$$



Q10: The solution set of the equality $|x - 3| = 7$ is

A) ~~{10}~~

B) {-4, 10}

C) {-10, -4}

D) ~~{0, 4}~~

$x - 3 = -7$ or $x - 3 = 7$
 $x = -7 + 3$ | $x = 7 + 3$
 $x = -4$ | $x = 10$
 الحل صيغة زوجية

Q11: The solution set of the inequality $|3x - 7| < 2$ is

A) $(\frac{5}{3}, 3)$

B) $(-\infty, \frac{5}{3}) \cup (3, \infty)$

C) $(-\infty, \frac{5}{3}] \cup [3, \infty)$

D) $[\frac{5}{3}, 3]$

$-2 < 3x - 7 < 2$
 $-2 + 7 < 3x < 2 + 7$
 $5 < 3x < 9$
 $\frac{5}{3} < \frac{3x}{3} < \frac{9}{3}$
 $\frac{5}{3} < x < 3$ $(\frac{5}{3}, 3)$

الحل صيغة

Q12: The solution set of the inequality $|2x + 5| \geq 7$ is

A) $(-6, 1)$

B) $(-\infty, -6) \cup (1, \infty)$

C) $(-\infty, -6] \cup [1, \infty)$

D) $[-6, 1]$

$2x + 5 \leq -7$ or $2x + 5 \geq 7$
 $2x \leq -7 - 5$ | $2x \geq 7 - 5$
 $\frac{2x}{2} \leq \frac{-12}{2}$ | $\frac{2x}{2} \geq \frac{2}{2}$
 $x \leq -6$ | $x \geq 1$
 $(-\infty, -6] \cup [1, \infty)$

Q13: The distance between the two points $(0, 3)$ and $(4, 0)$ is

A) $\sqrt{50}$ unit. B) $\sqrt{10}$ unit. C) 25 unit. **D) 5 unit.**

$$d = \sqrt{(0-4)^2 + (3-0)^2} = \sqrt{(-4)^2 + 3^2} = \sqrt{16+9} = \sqrt{25} = 5$$

x_1, y_1 x_2, y_2

Q14: The distance between the two points $(3, 2)$ and $(-1, -2)$ is

A) $\sqrt{32}$ unit. B) $\sqrt{8}$ unit. C) 4 unit. D) $\sqrt{18}$ unit.

$$\sqrt{(3-(-1))^2 + (2-(-2))^2} = \sqrt{4^2 + 4^2} = \sqrt{16+16} = \sqrt{32}$$

$$= \sqrt{16 \times 2} = 4\sqrt{2}$$

Q15: Equation of the horizontal line passing through the point $(-2, 5)$ is

A) $x = 5$ B) $y = -2$ **C) $y = 5$** D) $x = -2$

Q16: Equation of the line that passes through the point $(4, -1)$ with slope zero is

A) $x = 4$ B) $x = -1$ C) $y = 4$ **D) $y = -1$**

Q17: Equation of the vertical line passing through the point $(-2, 5)$ is

A) $x = 5$ B) $y = -2$ C) $y = 5$ **D) $x = -2$**

Q18: Equation of the line that passes through the point $(4, -1)$ and has no slope is

A) $x = 4$ B) $x = -1$ C) $y = 4$ D) $y = -1$

Q19: Slope of the following line $2y - 5x + 7 = 0$ is

A) $\frac{5}{2}$ B) $-\frac{5}{2}$ C) $\frac{2}{5}$ D) $-\frac{2}{5}$

$$\frac{x \text{ slope} -}{y \text{ slope} +} = \frac{-(-5)}{2} = \frac{5}{2}$$

Q20: Equation of the line with slope -6 and y-intercept 5 is

A) $y = -6x + 5$ B) $y = 6x + 5$ C) $y = -6x - 5$ D) $y = 6x - 5$

$$y = mx + b$$

$$y = -6x + 5$$

x_1, y_1 x_2, y_2

Q26: Equation of the line passing through the points (4,1) and (-2,3) is

A) $x + 3y + 7 = 0$	B) $x + 3y - 7 = 0$	C) $x - 3y - 7 = 0$	D) $x - 3y + 7 = 0$
---------------------	---------------------------------------	---------------------	---------------------

$$\frac{y - y_1}{x - x_1} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\frac{y - 1}{x - 4} = \frac{3 - 1}{-2 - 4}$$

$$\frac{y - 1}{x - 4} = \frac{2}{-6}$$

$$\frac{y - 1}{x - 4} = \frac{1}{-3}$$

$$-3(y - 1) = 1(x - 4)$$

$$-3y + 3 = x - 4$$

$$x + 3y - 4 - 3 = 0 \Rightarrow \boxed{x + 3y - 7 = 0}$$

x, y

Q27: Equation of the line that passes through the point (2,1) and parallel to the line $y = x + 2$ is

A) $y = x + 1$	B) $y = x - 1$	C) $y = -x + 3$	D) $y = x - 3$
----------------	----------------------------------	-----------------	----------------

$m = 1$

$$y = m(x - x_1) + y_1$$

$$y = 1(x - 2) + 1$$

$$y = x - 2 + 1$$

$$\boxed{y = x - 1}$$

Q28: Equation of the line that passes through the point (2,1) and **perpendicular** to the line $y = x + 2$ is

A) $y = x + 1$	B) $y = x - 1$	C) $y = -x + 3$	D) $y = x - 3$
----------------	----------------	-----------------------------------	----------------

$m = -1$ $P(x_1, y_1)$
 $P(2, 1)$

$$y = m(x - x_1) + y_1$$

$$y = -1(x - 2) + 1$$

$$y = -x + 2 + 1$$

$$\boxed{y = -x + 3}$$

Q29: Equation of the line that passes through the point $(-2, 2)$ and parallel to the line $2x + y = 4$ is

- A) $2x + y = -2$ B) $2x + y = 2$ C) $x - 2y = 6$ D) $x - 2y = -6$

x_1, y_1
 $P(-2, 2)$
 $m = -2$
 $y = m(x - x_1) + y_1$
 $y = -2(x + 2) + 2$
 $y = -2x - 4 + 2$
 $y = -2x - 2$
 $2x + y = -2$ x, y

Q30: The equation of the line passes through the point $(-2, 2)$ and perpendicular to the line $2x + y = 4$ is

- A) $2x + y = -2$ B) $2x + y = 2$ C) $x - 2y = 6$ D) $x - 2y = -6$

$m = \frac{1}{2}$ $P(-2, 2)$

$y = m(x - x_1) + y_1$
 $y = \frac{1}{2}(x + 2) + 2$

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

$2y = x + 6$

$x - 2y + 6 = 0$
 $x - 2y = -6$

Q31: If the graph of $y = 1 - x^2$ is shifting to the left 1 unit and then it is shifting downward 1 unit, thus the new graph can be represented by

- A) $y = (x + 1)^2$ B) $y = -(x + 1)^2$ C) $y = -(x - 1)^2$ D) $y = (x - 1)^2$

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

Q32: If the graph of $y = \sqrt{x}$ is shifting to the right 4 units and then it is shifting downward 2 units, thus the new graph can be represented by

- A) $y = \sqrt{x + 4} - 2$ B) $y = \sqrt{x - 4} + 2$ C) $y = \sqrt{x + 4} + 2$ D) $y = \sqrt{x - 4} - 2$

$x - 4$ $\sqrt{x - 4} - 2$

Q33: If the graph of $y = \sqrt{x}$ is shifting to the left 4 units and then it is shifting upward 2 units, thus the new graph can be represented by

- A) $y = \sqrt{x + 4} - 2$ B) $y = \sqrt{x - 4} + 2$ C) $y = \sqrt{x + 4} + 2$ D) $y = \sqrt{x - 4} - 2$

$x + 4$ $\sqrt{x + 4} + 2$

Q34: Domain of the function $f(x) = \sqrt{8-2x}$ is

- A) $(-\infty, 4)$ B) $(-\infty, 4]$ C) $(4, \infty)$ D) $[4, \infty)$

$$8 - 2x \geq 0$$

$$-2x \geq -8$$

$$\frac{-2x}{-2} \geq \frac{-8}{-2}$$

$$x \leq 4$$

$$(-\infty, 4]$$

دالة تسمى لها قيمته لا تكون سالبة
 معادله x موجبة
 $D = (-\infty, 4]$
 $D = (-\infty, 4]$

Q35: Domain of the function $f(x) = \frac{1}{x-1}$ is

- A) \mathbb{R} B) $\mathbb{R} - \{0\}$ C) $\mathbb{R} - \{-1\}$ D) $\mathbb{R} - \{1\}$

$x-1=0$
 $x=1$ | $DF = \mathbb{R} - \{1\}$

Q36: Domain of the function $f(x) = \frac{x}{\sqrt{2-x}}$ is

- A) $(2, \infty)$ B) $(-\infty, 2]$ C) $(-\infty, 2)$ D) $[2, \infty)$

$$2 - x > 0$$

$$-x > -2$$

$$\frac{-x}{-1} > \frac{-2}{-1}$$

$$x < 2$$

$$(-\infty, 2)$$

$2x + 10 \geq 0$
 $2x \geq -10$
 $x \geq -5$
 $f(x) = \sqrt{2x+10}$
~~A) $(-\infty, 5)$~~
~~B) $(-\infty, 5]$~~
 C) $(-5, \infty)$
~~D) $[-5, \infty)$~~

Q37: Domain of the function $f(x) = \frac{3x+5}{x^2-x-12}$ is

- A) $\mathbb{R} - \{3, 4\}$ B) $\mathbb{R} - \{-3, 4\}$ C) $\mathbb{R} - \{-3, 4\}$ D) $\mathbb{R} - \{-4, -3\}$

$$x^2 - x - 12 = 0$$

$$(x-4)(x+3) = 0$$

$$x-4=0 \quad | \quad x+3=0$$

$$x=4 \quad | \quad x=-3$$

$DF = \mathbb{R} - \{-3, 4\}$

Q46: The function $f(x) = x^2 - 6x$ is ^{even} ~~odd~~
 A) an even function. B) an odd function. C) an even and odd function. D) neither even nor odd function.

Q47: If $f(x) = x$ and $g(x) = \sqrt{x-1}$, then domain of the function $(f+g)(x)$ is
 A) $[1, \infty)$ B) $(-\infty, 1]$ C) \mathbb{R} D) $(1, \infty)$

$D_f = \mathbb{R}$ | $\begin{cases} x-1 \geq 0 \\ x \geq 1 \end{cases}$

$\begin{matrix} f+g \\ f-g \\ f \times g \end{matrix}$ $D_f \cap D_g$



Q48: If $f(x) = x$ and $g(x) = \sqrt{x-1}$, then domain of the function $(f-g)(x)$ is
 A) $(-\infty, 1]$ B) \mathbb{R} C) $(1, \infty)$ D) $[1, \infty)$

Q49: If $f(x) = x$ and $g(x) = \sqrt{x-1}$, then domain of the function $(f \times g)(x)$ is
 A) \mathbb{R} B) $(-\infty, 1]$ C) $[1, \infty)$ D) $(1, \infty)$

Q50: If $f(x) = x$ and $g(x) = \sqrt{x-1}$, then domain of the function $(f/g)(x)$ is

A) $[1, \infty)$	B) $(-\infty, 1]$	C) \mathbb{R}	D) $(1, \infty)$
------------------	-------------------	-----------------	------------------

$$\frac{f}{g}(x) = \frac{x}{\sqrt{x-1}}$$

$$x-1 > 0$$

$$x > 1$$

$$D_{f/g} = (1, \infty)$$

Q51: If $f(x) = x + 5$ and $g(x) = x^2 - 3$, then $(f \circ g)(x) =$

A) $x^2 + 2$	B) $x^2 - 2$	C) $-x^2 + 2$	D) $-x^2 - 2$
--------------	--------------	---------------	---------------

$$f \circ g = x^2 - 3 + 5 = x^2 + 2$$

Q52: If $f(x) = x + 5$ and $g(x) = x^2 - 3$, then $(f \circ g)(0) =$

A) 4	B) -2	C) 3	D) 2
------	-------	------	------

$$f(-3) = -3 + 5 = 2$$

$$g(0) = 0^2 - 3 = -3$$

Q53: If $f(x) = x + 5$ and $g(x) = x^2 - 3$, then $(g \circ f)(x) =$

A) $x^2 + 10x - 22$	B) $x^2 + 10x + 22$	C) $x^2 - 10x + 22$	D) $x^2 - 10x - 22$
---------------------	---------------------	---------------------	---------------------

$$g \circ f(x) = (x+5)^2 - 3$$

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

$$x^2 + 10x + 25 - 3 = x^2 + 10x + 22$$

Q54: If $f(x) = x + 5$ and $g(x) = x^2 - 3$, then $(g \circ f)(0) =$

- A) 20 B) -22 C) 22 D) 21

$g(5) = 5^2 - 3 = 25 - 3 = 22$
 $f(0) = 0 + 5 = 5$

Q55: If $f(x) = x + 5$, then $(f \circ f)(x) =$

- A) $x^2 + 5$ B) $x + 25$ C) $x + 10$ D) $x^2 + 10$

$f \circ f = x + 5 + 5 = x + 10$

Q56: If $f(x) = \frac{1}{1-x}$ and $g(x) = \sqrt{x-1}$, then $(f \circ g)(x) =$

- A) $\frac{-1}{1-\sqrt{x-1}}$ B) $\frac{1}{\sqrt{x-1}}$ C) $\frac{1}{1+\sqrt{x-1}}$ D) $\frac{1}{1-\sqrt{x-1}}$

$f \circ g = \frac{1}{1-\sqrt{x-1}}$

Q57: If $f(x) = \frac{1}{1-x}$ and $g(x) = \sqrt{x-1}$, then the domain of $(f \circ g)(x)$ is

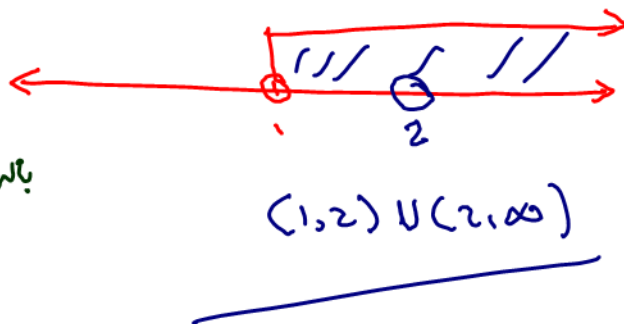
- A) $(1, \infty)$ B) $(1, 2) \cup (2, \infty)$ C) $[1, \infty)$ D) \mathbb{R}

$f \circ g = \frac{1}{1-\sqrt{x-1}}$

المجزر

$x-1 > 0$
 $x > 1$

$1 - \sqrt{x-1} = 0$
 $1 = \sqrt{x-1}$ بالتربيع
 $1^2 = (\sqrt{x-1})^2$
 $1 = x - 1$
 $1 + 1 = x$
 $x = 2$



Q58: If $f(x) = \frac{1}{1-x}$ and $g(x) = \sqrt{x-1}$, then $(g \circ f)(x) =$

A) $\sqrt{\frac{x}{x-1}}$

B) $\frac{x}{\sqrt{x-1}}$

C) $\sqrt{\frac{x}{1-x}}$

D) $\frac{x}{\sqrt{1-x}}$

$$g \circ f = \sqrt{\frac{1}{1-x} - 1} = \sqrt{\frac{1 - (1-x)}{1-x}}$$

$$= \sqrt{\frac{1-x+1}{1-x}} = \sqrt{\frac{x}{1-x}}$$

Q59: If $f(x) = \frac{1}{1-x}$ and $g(x) = \sqrt{x-1}$, then the domain of $(g \circ f)(x)$ is

A) $[0,1]$

B) $(0,1)$

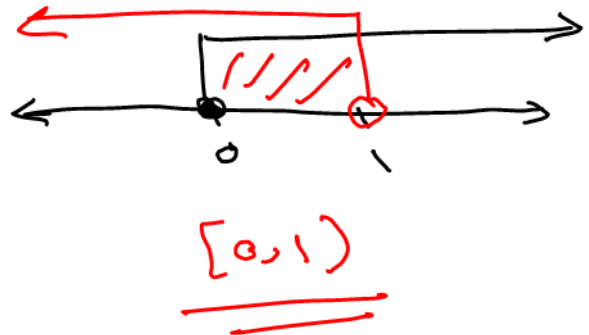
C) $(0,1)$

D) \mathbb{R}

$$g \circ f = \sqrt{\frac{x}{1-x}} = \frac{\sqrt{x}}{\sqrt{1-x}}$$

البي
 $x \geq 0$

$$\left. \begin{aligned} 1-x > 0 \\ \frac{x}{1-x} > -1 \\ x < 1 \end{aligned} \right\}$$



Q60: $[3.2] =$

A) 3.2

B) -3.2

C) 3

D) 4

Q61: $[-3.2] =$

A) 3.2

B) -3.2

C) -3

D) -4

Q62: If $f(x) = \frac{x-1}{x^3+x^2-6x}$, then the domain of $f(x)$ is given by

- A) $\mathbb{R} \setminus \{-3, -2, 0\}$ B) $\mathbb{R} \setminus \{-3, 0, 2\}$ C) $\mathbb{R} \setminus \{-2, 0, 3\}$ D) $\mathbb{R} \setminus \{0, 2, 3\}$

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

$$x(x^2 + x - 6) = 0$$

$$x = 0 \quad | \quad x^2 + x - 6 = 0$$

$$(x+3)(x-2) = 0$$

$$x+3=0 \quad | \quad x-2=0$$

$$x=-3 \quad | \quad x=2$$

$$D_f = \mathbb{R} - \{-3, 0, 2\}$$

$$\pi = 180 \quad \frac{\pi}{2} = 90 \quad \frac{\pi}{3} = 60$$

$$\frac{\pi}{4} = 45 \quad \frac{\pi}{6} = 30 \quad 2\pi = 360$$

$$\frac{3\pi}{2} = 270$$

Q63: $\frac{5\pi}{3} = 5 \times 60 = 300$

- A) 120° B) 270° C) 300° D) 150°

Q64: $150^\circ = \frac{5\pi}{6}$

$$150^\circ = \frac{180^\circ}{6} \cdot \pi = \frac{5\pi}{6}$$

- A) $\frac{7\pi}{6}$ B) $\frac{5\pi}{6}$ C) $\frac{6\pi}{5}$ D) $\frac{7\pi}{5}$

Q65: If a circle has radius 3 cm, what is the length of an arc subtended by a central angle of $\frac{2\pi}{3}$ rad?

- A) $\frac{2\pi}{9}$ cm B) $\frac{9}{2\pi}$ cm C) 2π cm D) $\frac{1}{2\pi}$ cm

$$r = 3 \quad \alpha = ? \quad A = \frac{2\pi}{3}$$

$$a = r \cdot \theta = 3 \left(\frac{2\pi}{3} \right) = 2\pi \text{ cm}$$

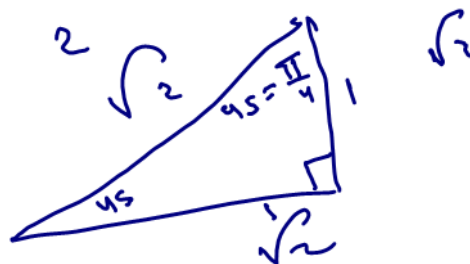


Q66: $\cos\left(\frac{3\pi}{4}\right) =$

- A) $-\sqrt{2}$ B) $\sqrt{2}$ C) $\frac{1}{\sqrt{2}}$ D) $-\frac{1}{\sqrt{2}}$

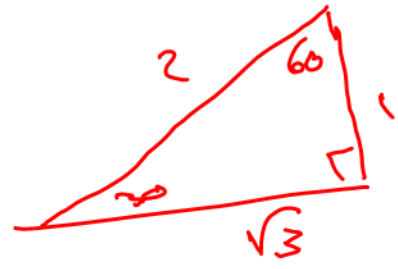
$$3 \times 45 = 135$$

$$-\cos \frac{\pi}{4} = -\frac{1}{\sqrt{2}} = -\frac{\sqrt{2}}{2}$$



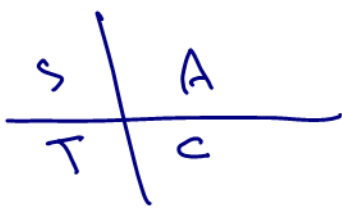
Q67: $\sin\left(\frac{2\pi}{3}\right) = \overset{120}{\textcircled{+}} \sin 60 = + \sin 60 = \frac{\sqrt{3}}{2}$

- A) $\frac{1}{2}$ B) $-\frac{\sqrt{3}}{2}$ **C) $\frac{\sqrt{3}}{2}$** D) $-\frac{1}{2}$

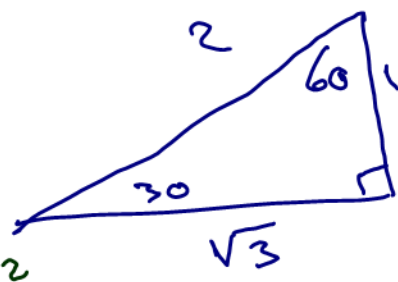


Q68: $\sec\left(\frac{4\pi}{3}\right) = \overset{240}{\textcircled{-}} \sec 60 = -2$

- A) $\frac{2}{\sqrt{3}}$ B) 2 **C) -2** D) $-\frac{2}{\sqrt{3}}$



$\cos 60 = \frac{1}{2}$
 $\sec 60 = \frac{2}{1} = 2$

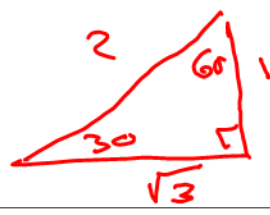


Q69: $|\cos(150^\circ)| = \left| -\frac{\sqrt{3}}{2} \right| = \frac{\sqrt{3}}{2}$

- A) $\sqrt{3}$ B) $\frac{1}{\sqrt{3}}$ C) $\frac{2}{\sqrt{3}}$ **D) $\frac{\sqrt{3}}{2}$**

$\cos 150 = -\cos\left(\frac{\pi}{6}\right) = -\cos 30 = -\frac{\sqrt{3}}{2}$

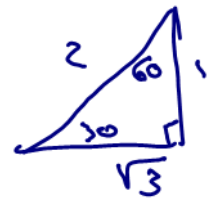
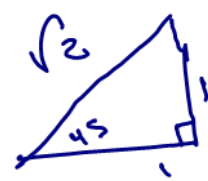
$\frac{180}{360} \cdot \pi = \frac{\pi}{2}$



Q70: $\sin(30^\circ) \times \tan(45^\circ) =$

- A) $\frac{1}{2}$** B) $\frac{1}{\sqrt{2}}$ C) $\frac{1}{\sqrt{3}}$ D) $\frac{\sqrt{3}}{2}$

$\frac{1}{2} \times \frac{1}{1} = \frac{1}{2}$



Q71: $2 \sin\left(\frac{\pi}{8}\right) \cos\left(\frac{\pi}{8}\right) =$

$\sin 2x = 2 \sin x \cos x$

- | | | | |
|----------------------------------------------------------|-----------------------------------------------|----------------------------------------|------------------------------------------------|
| <input checked="" type="radio"/> A) $\frac{1}{\sqrt{2}}$ | <input type="radio"/> B) $\frac{\sqrt{3}}{2}$ | <input type="radio"/> C) $\frac{1}{2}$ | <input type="radio"/> D) $-\frac{1}{\sqrt{2}}$ |
|----------------------------------------------------------|-----------------------------------------------|----------------------------------------|------------------------------------------------|

$\sin\left(\cancel{2}x \frac{\pi}{\cancel{4}8}\right) = \sin\left(\frac{\pi}{4}\right) = \sin 45$



Q72: $2 \times \sin(40^\circ) \times \cos(40^\circ) =$

- | | | | |
|-------------------------------------------|-------------------------------------------|------------------------------------------------------|-------------------------------------------|
| <input type="radio"/> A) $\sin(40^\circ)$ | <input type="radio"/> B) $\cos(40^\circ)$ | <input checked="" type="radio"/> C) $\sin(80^\circ)$ | <input type="radio"/> D) $\cos(80^\circ)$ |
|-------------------------------------------|-------------------------------------------|------------------------------------------------------|-------------------------------------------|

$\sin(2 \times 40) = \sin(80)$

Q73: $\frac{\sin^2(25^\circ) + \cos^2(25^\circ)}{\csc(70^\circ)} = \frac{1}{\csc(70)} = \sin 70$

- | | | | |
|------------------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|
| <input checked="" type="radio"/> A) $\sin(70^\circ)$ | <input type="radio"/> B) $\cos(70^\circ)$ | <input type="radio"/> C) $\csc(70^\circ)$ | <input type="radio"/> D) $\sec(70^\circ)$ |
|------------------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|

Q74: $\cos^4 x - \sin^4 x =$

- | | | | |
|-------------------------------------|----------------------------|-------------------------------------|------------------------------------------------|
| <input type="radio"/> A) $\cos^2 x$ | <input type="radio"/> B) 1 | <input type="radio"/> C) $\sin(2x)$ | <input checked="" type="radio"/> D) $\cos(2x)$ |
|-------------------------------------|----------------------------|-------------------------------------|------------------------------------------------|

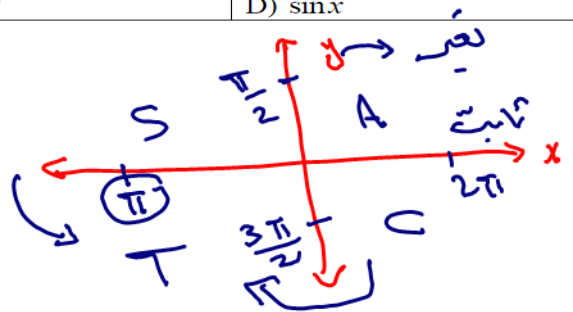
$(\cos^2 x - \sin^2 x) (\cos^2 x + \sin^2 x)$

$a^2 - b^2 = (a - b)(a + b)$

$= \cos^2 x - \sin^2 x = \underline{\underline{\cos 2x}}$

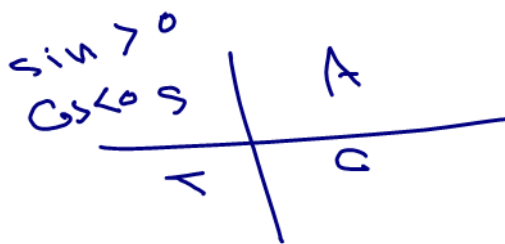
Q75: $\cos(\pi+x) = -\cos x$

- | | | | |
|--------------|--------------|-------------|-------------|
| A) $-\cos x$ | B) $-\sin x$ | C) $\cos x$ | D) $\sin x$ |
|--------------|--------------|-------------|-------------|



Q76: $\sin\left(\frac{3\pi}{2}-x\right) = -\cos x$

- | | | | |
|-------------|--------------|-----------------------------------------------|-------------|
| A) $\cos x$ | B) $-\sin x$ | <input checked="" type="radio"/> C) $-\cos x$ | D) $\sin x$ |
|-------------|--------------|-----------------------------------------------|-------------|



سالب موجب

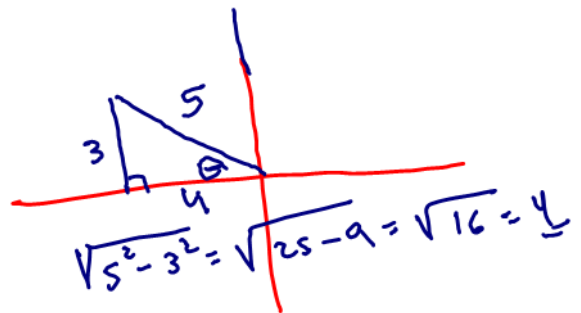
Q77: If $\sin \theta > 0$ and $\cos \theta < 0$, then the angle θ lies in the

- | | | | |
|--------------------|------------------------------------------------------|--------------------|---------------------|
| A) first quadrant. | <input checked="" type="radio"/> B) second quadrant. | C) third quadrant. | D) fourth quadrant. |
|--------------------|------------------------------------------------------|--------------------|---------------------|

Q78: If $\sin \theta = \frac{3}{5}$, where $\frac{\pi}{2} < \theta < \pi$, then $\tan \theta =$

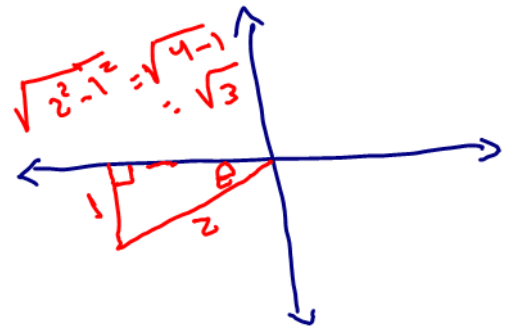
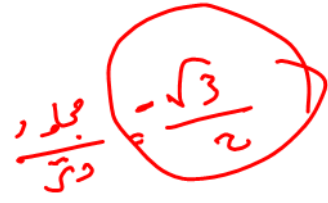
- | | | | |
|-------------------|----------------------------------------|----------------------------------------------------|----------------------------------------|
| A) $-\frac{4}{3}$ | B) $\frac{3}{4}$ | <input checked="" type="radio"/> C) $-\frac{3}{4}$ | D) $\frac{4}{3}$ |
|-------------------|----------------------------------------|----------------------------------------------------|----------------------------------------|

$\frac{-3}{4} = \frac{\text{ضلع قائم}}{\text{ضلع مجاور}}$



Q79: If $\sin \theta = -\frac{1}{2}$, where $\pi < \theta < \frac{3\pi}{2}$, then $\cos \theta =$

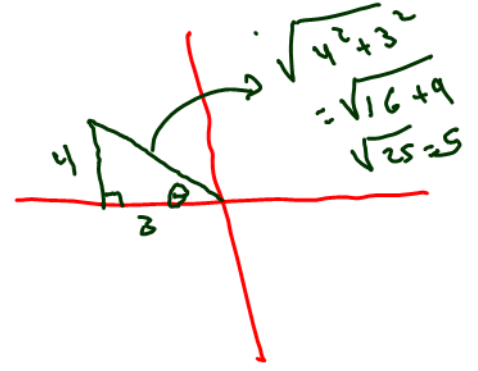
A) $-\frac{\sqrt{3}}{2}$	B) $\frac{\sqrt{3}}{2}$	C) $-\frac{2}{\sqrt{3}}$	D) $\frac{2}{\sqrt{3}}$
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Q80: If $\tan \theta = -\frac{4}{3}$, where $\frac{\pi}{2} < \theta < \pi$, then $\csc \theta =$

A) $-\frac{5}{4}$	B) $-\frac{5}{3}$	C) $\frac{5}{4}$	D) $\frac{5}{3}$
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Handwritten: $\csc = \frac{\text{دتی}}{\text{مقابل}} = \frac{5}{4}$ (circled)

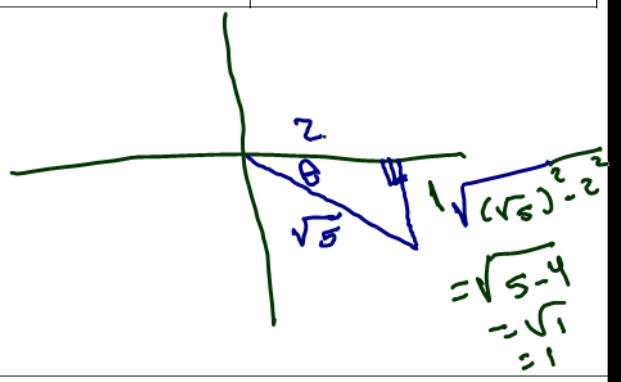


Q81: If $\sec \theta = \frac{\sqrt{5}}{2}$, where $\frac{3\pi}{2} < \theta < 2\pi$, then $\tan \theta =$

A) $-\frac{1}{2}$	B) -2	C) $\frac{1}{2}$	D) 2
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Handwritten: $\frac{1}{2}$ (circled), "دتی"

Handwritten: $\tan \theta = -\frac{1}{2}$ (circled)



Q82: The function $f(x) = \frac{\sin x}{\cos x}$ is

A) an even function.	B) an odd function.	C) an even and odd function.	D) neither even nor odd function.
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Handwritten: (A) circled