

1. Consider the equation  $2H + \frac{3y^2}{yx} = \frac{1}{n}$  of  $y$  and  $H$ . Write  $x$  in terms of  $y$  and  $H$ .

A.  $x = \frac{9y^2 H^2}{(-1-2H^2)^2}$

B.  $x = \frac{3y^4 H^2}{(-1-2H^2)^2}$

C.  $x = \frac{3y^4 H^2}{(-H-2H^2)^2}$

D.  $x = \frac{9y^4 H^2}{(-1-2H^2)^2}$

2. Given the function  $f(x) = \frac{1}{x^2}$

2. Given the function  $f(x) = 4x^2 - 8x + 3$ , defined by what are the coordinates of its vertex?

- A. (1, -1)
- B. (-1, 15)
- C. (2, 3)
- D. (-2, 35)

3. If  $y > 3x - 1$ , and  $3x > 5$ ,  
which of the following is true?

A.  $y > 3$

B.  $y > 4$

C.  $y < 7$

D.  $y < 4$

D.  $y < 4$

$$\sqrt{x^2 + 4} - 3 = x + 4$$

4. Which of the following is the solution of the equation above?

A.  $x = -\frac{45}{14}$

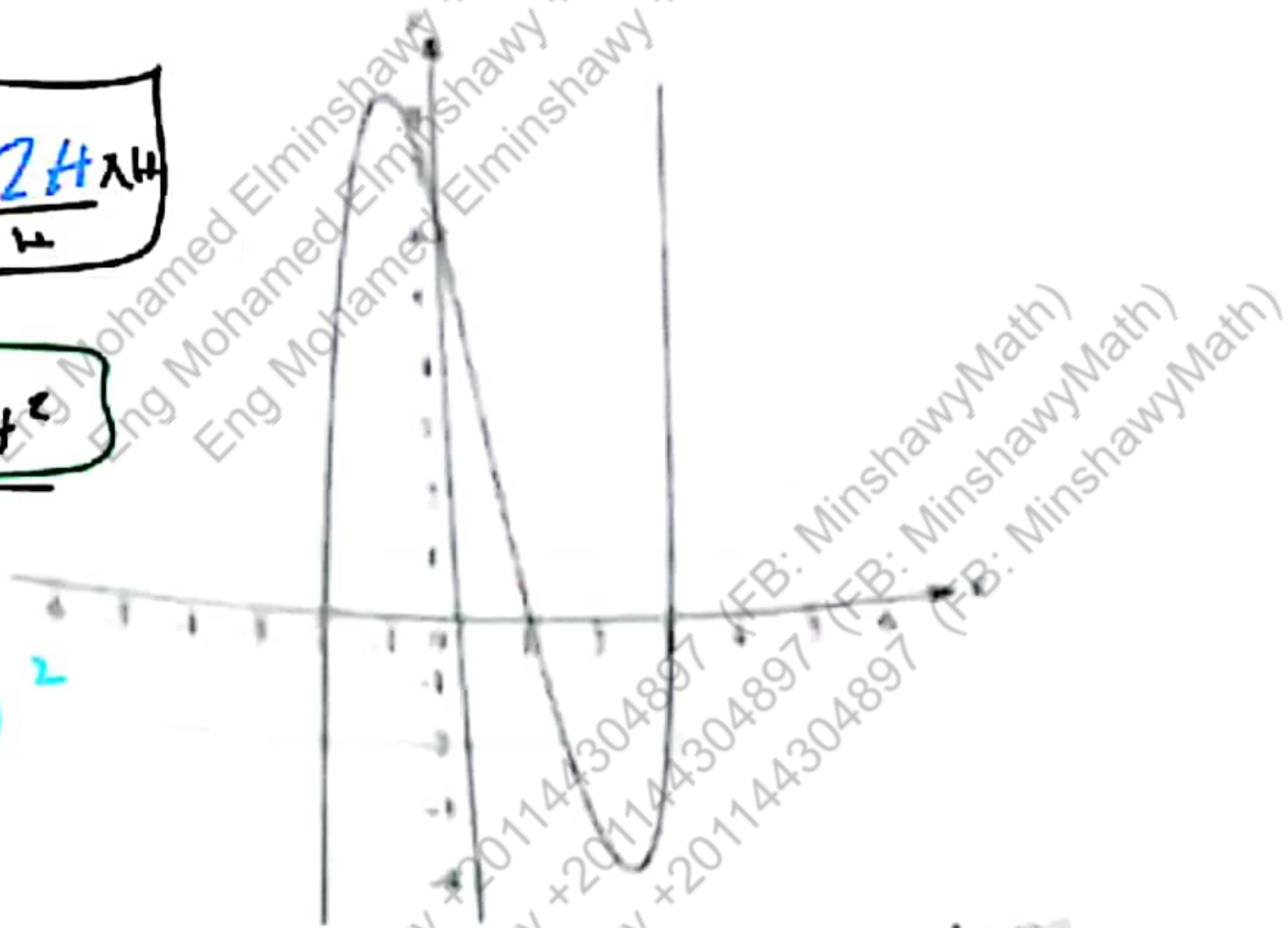
B.  $x = -\frac{14}{45}$

C.  $x = \frac{14}{45}$

D.  $x = \frac{45}{14}$

$$\frac{-2H\lambda H}{L}$$

$$4e$$



5. Which of the following equations is represented in the graph above?

A.  $y = (x - 2)(x + 3)(x + 1)$

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

C.  $y = (x + 2)(x - 3)(x - 1)$

D.  $y = (x - 2)(x - 3)(x + 1)$

D.  $y = (x - 2)(x - 3)(x + 1)$

$2a + 3(4a - 5) + 2 = 3(a + 3)$

6. Solve the equation above for  $a$ .

A.  $a = 1$

~~B.  $a = 2$~~

C.  $a = 4$

D.  $a = 11$

7. Which of the following is/are not a solution for  $|2x - 1| > 3$ ?

I.  $x = -2$

II.  $x = 0$

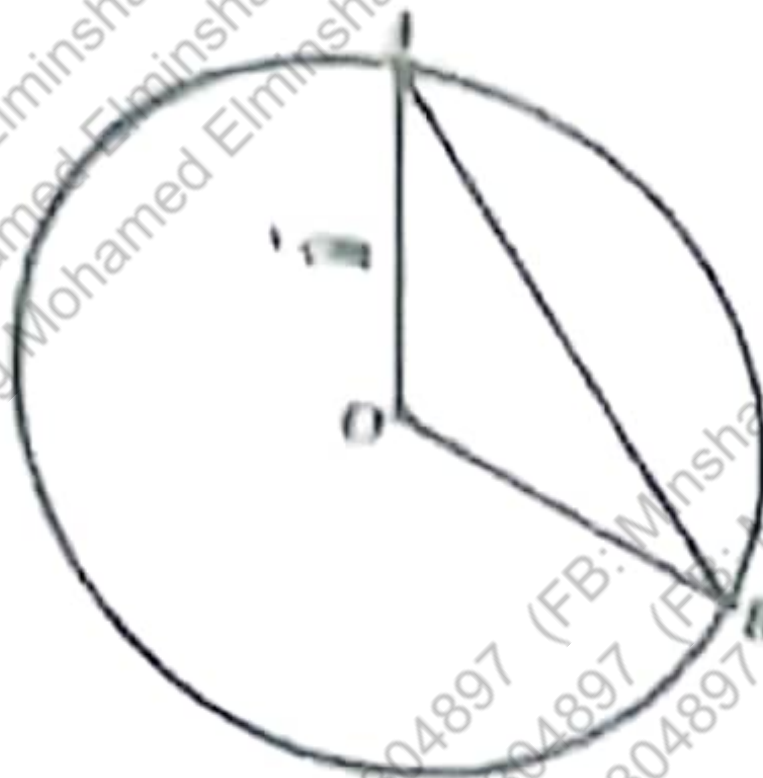
III.  $x = 2$

A. I only

B. II only

C. I and II

D. II and III



8. In the figure above, the radius of the circle is  $3\text{ cm}$ , and the minor arc  $AB$  has a length of  $2\pi\text{ cm}$ . What is the measure of angle  $AOB$ ? (Figure not drawn to scale)

- A.  $60^\circ$
- B.  $90^\circ$
- C.  $120^\circ$
- D.  $135^\circ$



9. If  $x = 2a$ , and  $a = -\frac{1}{4}$ , what is the value of  $2x + 5$ ?

- A. 1
- B. 4
- C. 6
- D. 8

10. Given the line with equation  $5y - 3(x - 2) = -1$ , which of the following statements is true?

A. The slope of the line is  $\frac{3}{5}$ , and the line is decreasing.

B. The slope of the line is  $-\frac{3}{5}$ , and the line is decreasing.

C. The slope of the line is  $\frac{3}{5}$ , and the line is increasing.

D. The slope of the line is  $-\frac{3}{5}$ , and the line is increasing.

the time is increasing.  
11. If  $i^2 = -1$ , what is the sum of  $4 + 7i$  and  $-2 + 7i$ ?

A.  $1 + 14i$

B.  $2$

C.  $14i$

D.  $2 + 14i$

12. The solution of the equation above is  $x = \frac{1}{a}$ , where  $a$  is a real number. What is the value of  $a$ ?

- A. 1
- B. 3
- C. 9
- D. 12

13. What is the slope of the line of perpendicular to the line of equation  $3y + x = 15$ ?

- A.  $\frac{1}{3}$
- B.  $-\frac{1}{3}$
- C. 3
- D. 6

D. 6

14. If  $x^2 = b^6$ , and  $y = b^5$ , then

A.  $b^8$

B.  $b^{20}$

C.  $b^{96}$

D.  $b^{132}$

defined by

D.  $b^{132}$

15. Given the function  $g$  defined by  $g(x) = -3x^2 + 6x + 1$ , which of the following statements is/are true?

~~I.~~ The graph of  $g$  concaves upwards.

~~II.~~ The axis of symmetry of the graph is at the positive side of the  $x$ -axis.

III. The graph of  $g$  reaches a minimum value.

A. I only

B. II only

C. I and III

D. I, II and III

12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65  
66  
67  
68  
69  
70  
71  
72  
73  
74  
75  
76  
77  
78  
79  
80  
81  
82  
83  
84  
85  
86  
87  
88  
89  
90  
91  
92  
93  
94  
95  
96  
97  
98  
99  
100

16. If  $f(x) = x^2 - 4$ , and  $g(x) = 3x - 1$ ,  
then  $f(g(-2)) =$

A. 44

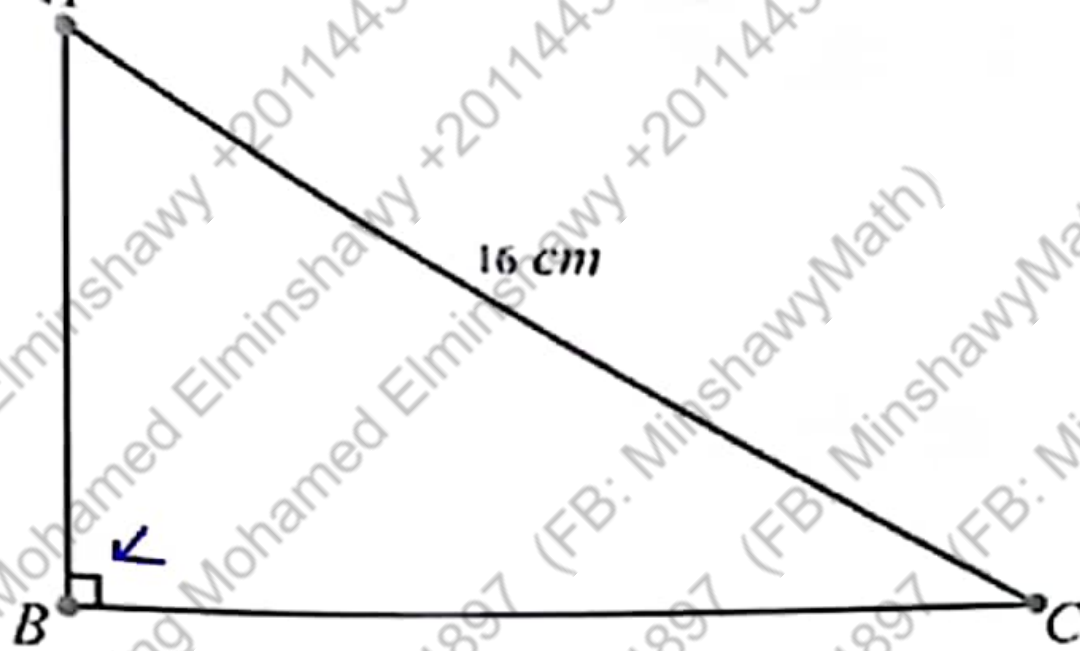
B. 45

C. 49

D. 53

1





17. In the figure above,  $ABC$  is a right triangle at  $B$ , such that  $AC = 16\text{ cm}$ . If  $AB = \frac{AC}{2}$ , and  $m\angle ACB = x^\circ$ , then  $x =$

- A. 30
- B. 45
- C. 60
- D. 75

**D. 75**

$$\begin{cases} x + 2y = -1 \\ 2x = y + 8 \end{cases}$$

**18.** The value of  $x$  that satisfies the system of equations above is:

**A. 1**

**B. 2**

**C. 3**

**D. 4**

19. The coefficient of the  $x$  term in the expansion of  $(2 - 3x)(x^2 + 4x + 1)$  is:

- A. 3
- B. 5
- C. 8
- D. 11

$$27 < 4x - 3 \leq 31$$

**20.** The only integer that satisfies the inequality above is:

**A. 8**

**B. 11**

**C. 28**

**D. 32**