

1.

Which of the following graphs represents the function f by the equation $2y - 3x = 5$?

2.

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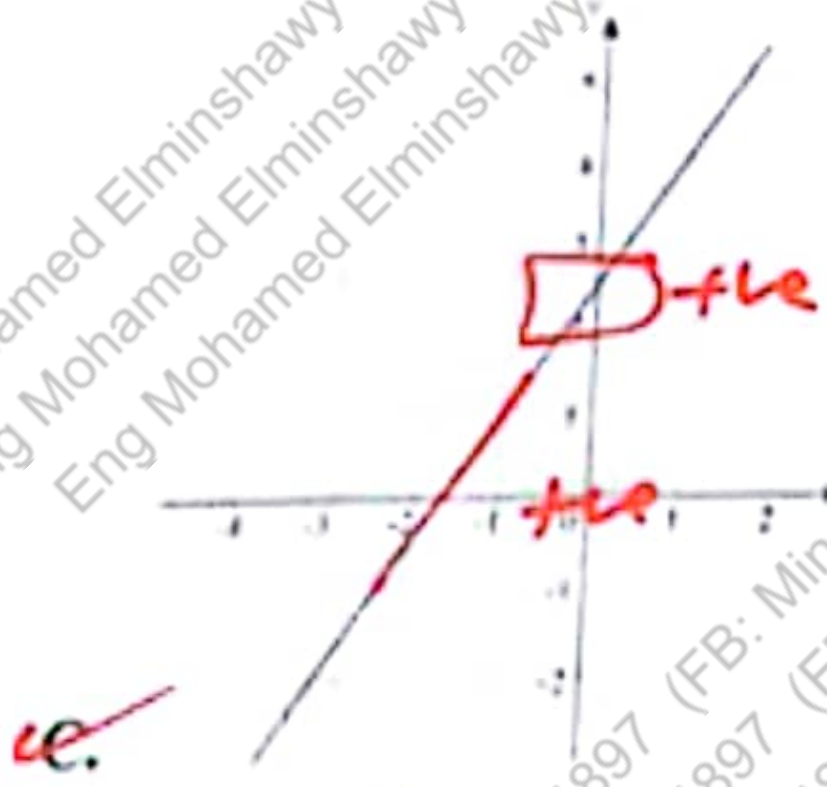
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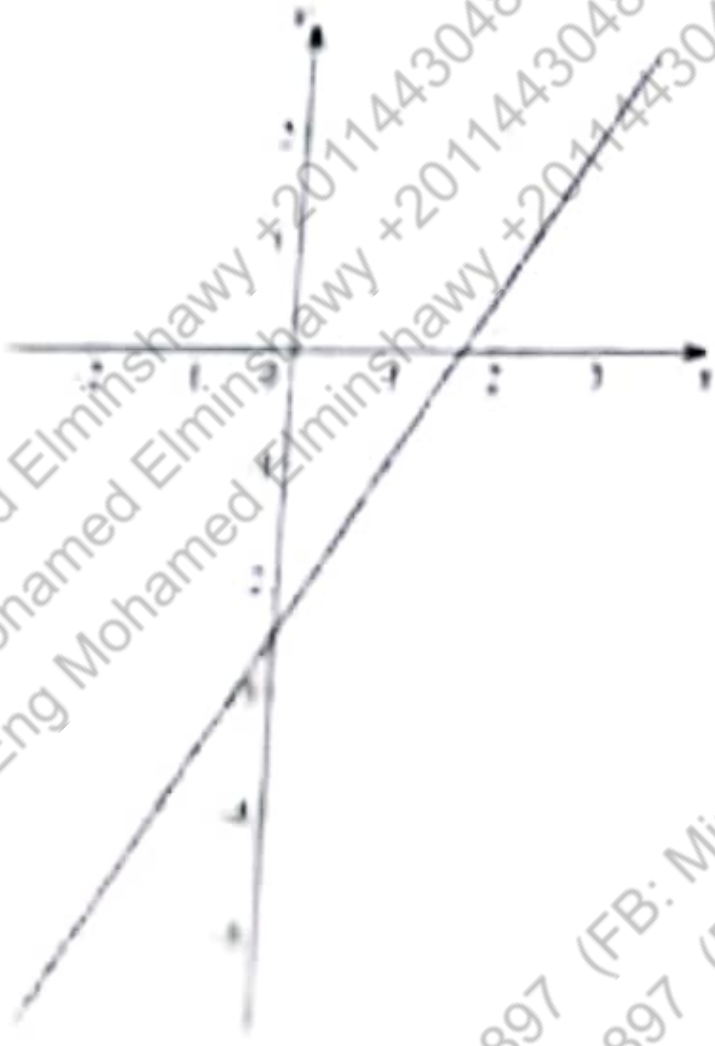
B.

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B.



D.



2. An amount of \$12,000 is to be divided between the winner and the runner-up in a spelling competition in the ratio 5 : 3. To participate in the competition, each player should pay \$600. How much money will the winner get as a profit?

- A. \$3,900**
- B. \$6,900**
- C. \$7,500**
- D. \$8,100**

Questions 3 and 4 refer to the information below:

At a beach, the probability of having high waves on any given day is 0.22.

3. What is the probability of having high waves on three consecutive days at this beach?

- A. 0.0106**
- B. 0.0206**
- C. 0.0484**
- D. 0.4746**

4. What is the probability of having

D. 0.4740

4. What is the probability of having high waves on one day and no high waves on the second day at this beach?

A. 0.0484

B. 0.1214

C. 0.1716

D. 0.6084

x	1	3	4	6	9
y	$\frac{3}{2}$	$\frac{3}{8}$	$\frac{3}{16}$	$\frac{3}{64}$	$\frac{3}{512}$

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

A. $y = \left(\frac{3}{2}\right)^x$

B. $y = \left(\frac{1}{2}\right)^x + 3$

C. $y = \left(\frac{1}{2}\right)^x - 3$

D. $y = 3\left(\frac{1}{2}\right)^x$

6. Given a linear function f such that $f(2) = 1$, and $f(-3) = 11$. What is the y -intercept of f ?

A. 3

B. 5

C. 6

D. 9

7. A group of 5 friends decided to go on a trip from country Z to country X. The total cost of flight tickets and hotel rooms for all five friends is \$3,625. When two of the friends cancelled their flights, the total amount to be paid was reduced by only 20%. Additionally, these two friends decided to contribute \$250 each. If costs are shared equally, the amount of money that each of the remaining three friends has to pay now is

- A. \$75 more than the original individual cost of the trip.
- B. \$100 more than the original individual cost of the trip.
- C. \$25 less than the original individual cost of the trip.
- D. The same amount as the original individual cost of the trip.

Questions 8 - 10 refer to the information below:



In a large village, 40 citizens were surveyed by the municipality about their favorite afternoon snack. Their responses were collected and represented in the pie chart above, which was then submitted to the country's government for food analysis. It is noteworthy that the majority of the 40 citizens chose chocolate as their favorite afternoon snack.

afternoon snack.

8. How many citizens chose chocolate as their favorite afternoon snack?

A. 4 citizens

B. 8 citizens

C. 18 citizens

D. 20 citizens

D. 20 citizens

9. If the least chosen snack was fruits, and biscuits were considered the second-best popular option, how many citizens chose nuts as their favorite afternoon snack?

A. 4 citizens

B. 6 citizens

C. 8 citizens

D. 12 citizens

10. The government sent the survey back to the municipality to apply a major modification. What could be the best reason for this return?

A. The survey should include more citizens who favor fruits.

B. The survey should include more teenagers.

C. The pie chart does not represent the number of citizens who favor each type of snack.

D. The survey is biased as it does not represent the preferences of all citizens in the village.

an citizens in the village.

11. To access a sports news website, individuals must pay a \$3 registration fee in addition to \$0.15 for each article read. George paid \$5.25 last week for this website. How many articles has he read?

A. 12

B. 15

C. 17

D. 18

D. 18

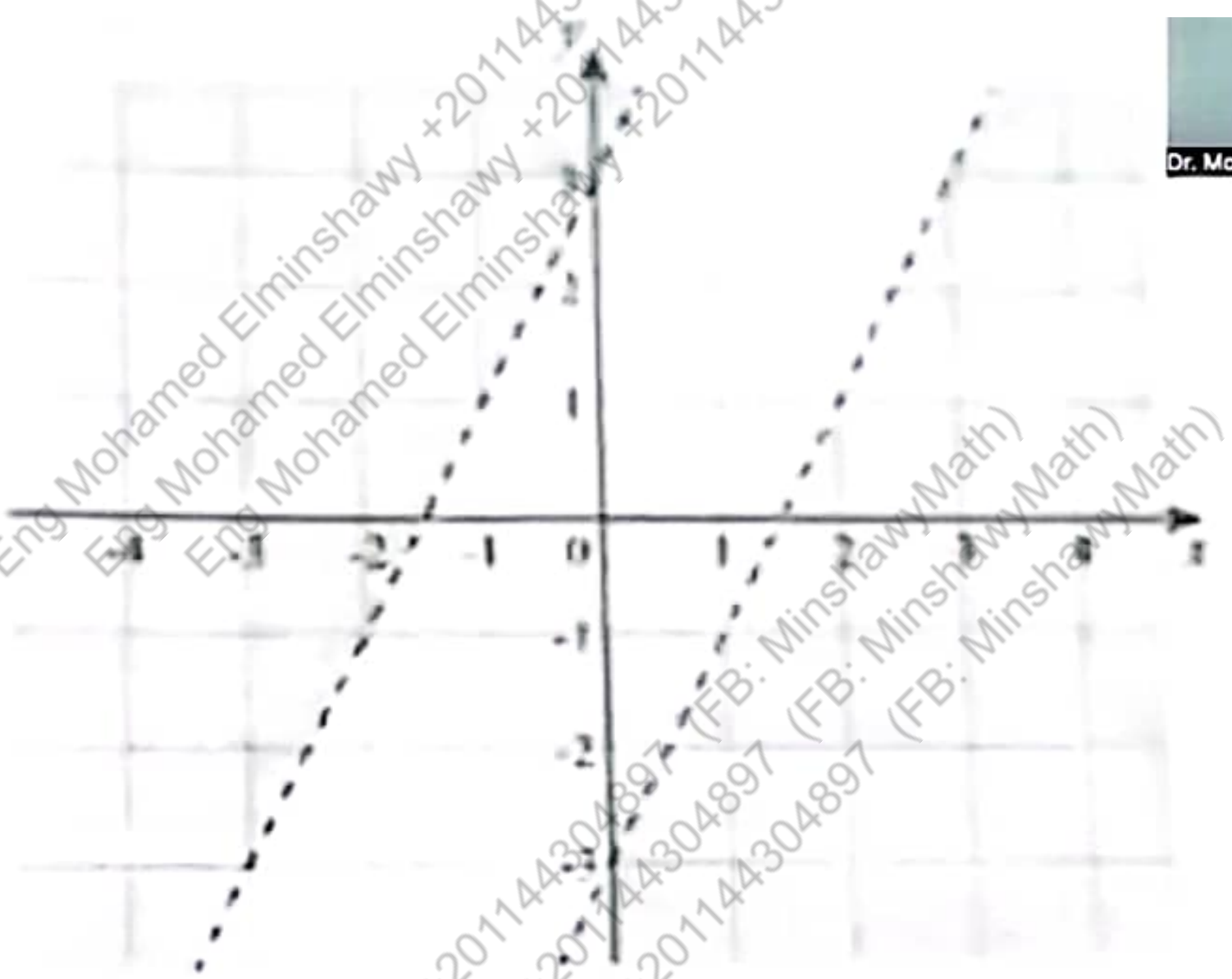
12. Amani invested \$ a for 2 years at a rate of 2% compounded annually. The interest she obtained after these 2 years was \$210.08. What is the value of a ?

A. \$5,000

B. \$5,100

C. \$5,200

D. \$5,300



13. Which absolute value inequality is graphed above, given that the shaded region represents the solution set?

A. $|2x - y| > 3$

B. $|2x - y| < 3$

C. $|2x + y| > 3$

D. $|2x + y| < 3$

2

D. $|2x + y|$

14. In country A, 350 high school students received admission offers from top 100 worldwide universities, and 72% of them accepted the offers. How many students rejected their offer?

A. 49

B. 82

C. 98

D. 102

Questions 15 – 17 refer to the information below:

A company that produces staples uses the two functions $f(x) = x^3 - 4x + 4$ and $g(x) = \frac{1}{3}x^3 + x$ to find the cost and the revenue per day, respectively, in thousands of dollars, when producing x hundred boxes of staples. The graphs of f and g are represented in the figure below.



15. Andre, the manager of this company, decided to limit the production of staples to 217 boxes per day. Which of the following best describes the reason behind Andre's decision?

A. Producing 217 boxes of staples will yield an optimal daily revenue for the company.

B. Exceeding the production of 217 boxes of staples will result in costs surpassing revenue.

C. Producing more than 217 boxes of staples is ineffective for society.

D. Producing 217 boxes of staples will generate a daily revenue

16. What will be the cost of producing 100 boxes of staples?

A. \$1

B. \$1,000

C. \$999,604

D. \$999,604,000

D. \$999,604,000

17. From the graph, approximately at what production level of boxes of staples is the revenue twice the cost?

A. 100 boxes

B. 110 boxes

C. 130 boxes

D. 160 boxes

18. What is the positive value of x if

$$x - \frac{3}{x} = 2?$$

A. 1

B. 2

C. 3

D. 5

19. What is the simplified form of

20. What is the product of the solutions of $3x^4 + 11x^2 + 6 = 0$?

- A. i
- B. $2i$
- C. 2
- D. -2

21. The arithmetic mean of four consecutive odd integers is 14. What is the smallest number between these 4 integers?

- A. 7
- B. 9
- C. 11
- D. 13

D. 13

22. If $\sqrt{x^2 + 3y} = 3x + 1$, and $x = 2$,
what is the value of y ?

A. $y = 7$

B. $y = 9$

C. $y = 12$

D. $y = 15$

23. What is the probability that a random

23. What is the probability that a random arrangement of the letters of the word RESUME has an E on each end?

A. 0.067

B. 0.076

C. 0.089

D. 0.095

24. The two lines l and m of respective equations $x + 5ny = 17$ and $2nx + 10y = 3$ are parallel. Determine n if $n > 0$.

- A. 1
- B. 3
- C. 5
- D. 10

25. The graph of $f(x) = 3x^3 - 4mx + 3$, where m is a real number, passes through $(1, 2)$. What is the value of m ?

A. $m = -1$

B. $m = 1$

C. $m = 2$

D. $m = 4$

14

7

4, 3, 3, 5, 5, 7, 7, 5, 8, 9, 11, 11

26. Given the set of data above, which of the following statements is/are true?

I. Its mean is an integer greater than 5.

II. Its mean is greater than its mode.

III. Its range is equal to the sum of its mean and half the mode.

A. I only

B. II only

C. I and II

D. II and III

27. Which of the following is equivalent

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

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

B. $-x^2 - 4x + 9 = 0$

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

D. $-x^2 - 2x + 3 = 0$

D. $-x^4 - 2x + 3 = 0$

28. If $3x + 3my + 5 = -1$, what is the value of $x + my$?

A. -5

B. -2

C. 1

D. 2

29. If $2x + 5y = 4$, and $x - y = -5$,
then $x =$

A. -3

B. 1

C. 2

D. 5

30. What is the radicand in the simplified form of $\sqrt[3]{4x^4y^3}$?

A. x

B. $2x$

C. $4x$

D. There is no radicand in the simplified form.

31. Consider the line of equation

$$2y + \frac{5}{3}x = \frac{1}{2}$$

the x -intercept is $\frac{3}{h}$, then h is equal to:

- A. 5
- B. 6
- C. 10
- D. 16

D. 10

32. The angles in an equilateral triangle have measures equal to $(2x - 10)^\circ$, $(4y + 12)^\circ$, and $(z - 5)^\circ$. What is the value of $3x - y + z$?

A. 52

B. 66

C. 104

D. 158

33. The expression $64 \times (7x^2y^3)^2$ can be written as $2^M N^2 x^4 y^6$, where M and N are two positive integers such that $M \leq 4$. If $2^M > N$, then $M + N$ is equal to:

A. 9

B. 11

C. 18

D. 20

34. If $k\%$ of 420 is 63, what is the value of k ?

A. 15

B. 20

C. 25

D. 30

35. The graphs of the two functions $f(x) = -x + 1$ and $g(x) = 2x + 7$ intersect at point A. What is the y-coordinate of A?

A. 1

B. 3

C. 5

D. 7

36. In a school, 36 students were asked whether they eat pasta or rice at lunch; 18 of them chose pasta, and 22 chose rice. If all students have chosen at least one thing to eat, how many students chose both?

A. 2

B. 4

C. 6

D. 8

D. 8

18 → 22

5

37. A restaurant offers a 40 cm diameter pizza for \$12. Three friends divided one pizza among themselves, with each paying for the slices they eat proportionally. If Samir ate one-eighth of the pizza, how much should he pay?

- A. \$1.5
- B. \$2.0
- C. \$2.5
- D. \$3.0

D. \$3.0

38. Given ABC is a right triangle at C , such that $AC = 7$ cm. If $m\angle ABC = 30^\circ$, what is the length of \overline{AB} ?

A. 8

B. 9

C. 12

D. 14