

Asian university for women

Mathematics sample question paper for admission test

Part I: Multiple-Choice Questions, 25 Questions (Each question carry one mark).

Time: total one hour

Full marks: 50

1) When the product of (-6) and $(+2)$ is divided by (-2) , the quotient is

A) $\frac{1}{2}$

B) ± 6

C) $+6$

D) -6

2) If $1 + \frac{1}{2t} = \frac{2t+1}{2t}$, then $t = ?$

A) All values except 0

B) 0 only

C) No values

D) -2 .

3) $\left(-\frac{8}{27}\right)^{\frac{-1}{3}} = ?$

A) $+\frac{3}{2}$

B) $-\frac{2}{3}$

C) $-\frac{4}{9}$

D) $-\frac{3}{2}$

4) If x and y are not equal to 0, then $(-x)^{16} \times \sqrt[8]{y}$ must be

i) Positive ii) Negative iii) An integer iv) A mixed fraction

A) i) only

B) ii) & iv) only

C) iii) only

D) iv) only

- 5) If n is even number and k is integer , then $\sqrt[n]{-k}$ must be
- i) Positive number ii) negative number iii) imaginary number
- A) i) Only
B) iii) only
C) iii) & ii) only
D) ii) only .

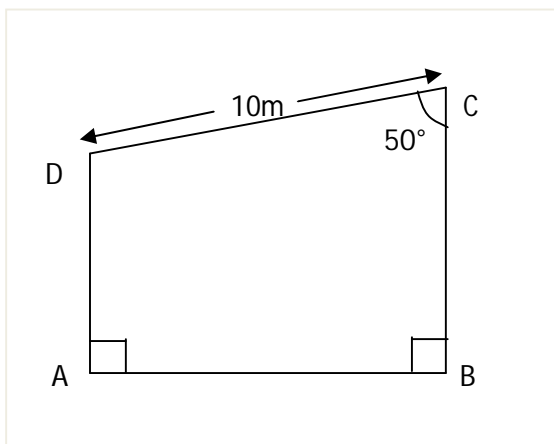
- 6) Write in exponential form $x = \log_5 7$.
- A) $7^x = 5$
B) $5^7 = x$
C) $5^x = 7$
D) $7^1 = x$

- 7) If $\log_2 p = x$ and $\log_4 q = y$ then $p^2q = ?$
- A) 2^{2x+2y}
B) 2^{2x-4y}
C) $2^{\frac{x}{2} + y}$
D) 2^{2x-2y}

- 8) $e^{\ln(1+x)} = ?$
- A) 0
B) $\ln(1 + x)$
C) e
D) $1 + x$

9)

According to the following figure length of $AB = ?$

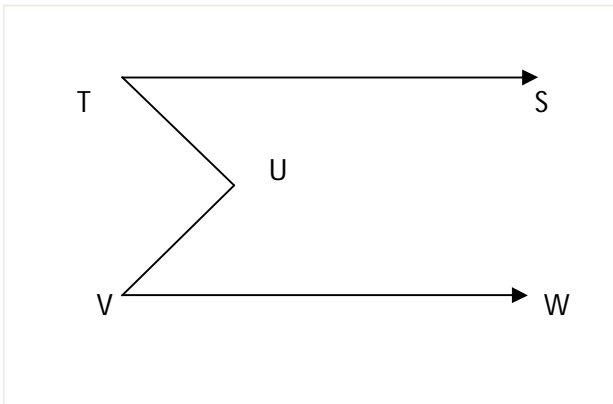


- A) 25.6 m
- B) 62 m
- C) 27.6m
- D) 26.6m

10) If $\cos PQR = \frac{12}{13}$ the $\tan PQR = ?$

- A) $\frac{13}{12}$
- B) $\frac{5}{12}$
- C) $\frac{5}{7}$
- D) $\frac{10}{12}$

11)

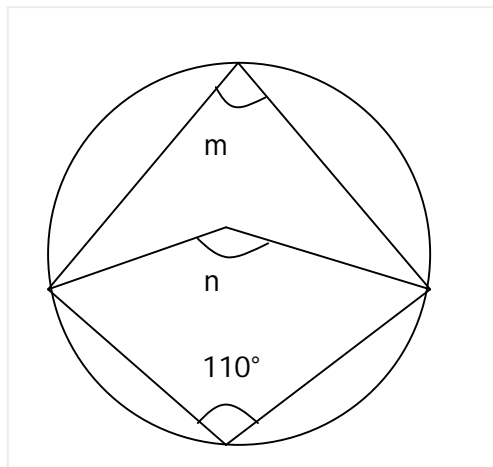


Reflex angle $TUV = ?$

- A) $\angle TUV = 180^\circ$
- B) $\angle TUV = 380^\circ$
- C) $\angle TUV = 170^\circ$
- D) $\angle TUV = 280^\circ$

12)

O is the centre of the circle. If you work out the size of the marked angles the which is true ?



- A) $m = 70^\circ, n = 140^\circ$
- B) $m = 70^\circ, n = 40^\circ$
- C) $m = 140^\circ, n = 120^\circ$
- D) $m = 70^\circ, n = 145^\circ$

13) A is $(a, 3)$ and B is $(4, b)$. If the midpoint of AB is $(3, 5)$, what are the values a and b ?

- A) $a = 3, b = 4$
- B) $a = 3, b = 5$
- C) $a = 2, b = 7$
- D) $a = 2, b = 3.5$

14) Gradient of the line $2x - 3y = 5$ is

- A) $\frac{5}{3}$
- B) $-\frac{2}{3}$
- C) $\frac{3}{2}$
- D) $\frac{2}{3}$

15) $P(0, 9)$ and $Q(6, 0)$ are two points. A line is drawn from the origin perpendicular to PQ , then equation of the line is ?

- A) $2x - 3y = 0$
- B) $3y - 2x = 0$
- C) $-6x = 9y$
- D) $9y - 6x = 0$.

16) Let $A = [\{a, b\}, \{c\}, \{d, e, f\}]$ determine from the following statements which is true

- A) $a \in A$
- B) $\{a\} \subseteq A$
- C) $C \subseteq A$
- D) $\{c\} \in A$.

17) Consider the following sets

$$\phi, A = \{a\}, B = \{c, d\}, C = \{a, b, c, d\}, D = \{a, b\}, E = \{a, b, c, d, e\}$$

Determine from the following statements which is false

- A) $\phi \subseteq A$
- B) $D \not\subseteq E$
- C) $A \not\subseteq B$
- D) $D \not\subseteq A$

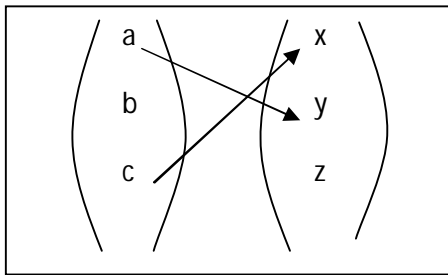
18) Let A be the set of students in a university. Determine which of the following assignment defines is not a function.

- A) To each student assign his / her age.
- B) To each student assign his / her sex
- C) To each student assign his / her mathematics score.
- D) To each student assign his / her teacher.

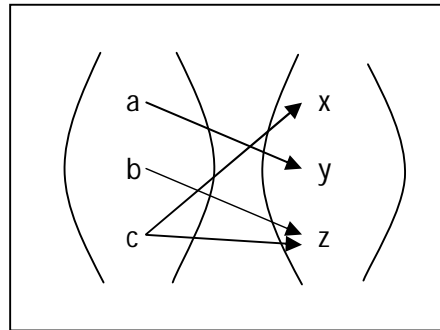
19)

Which relation defines a function?

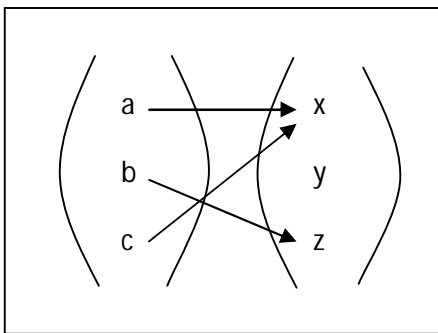
A.



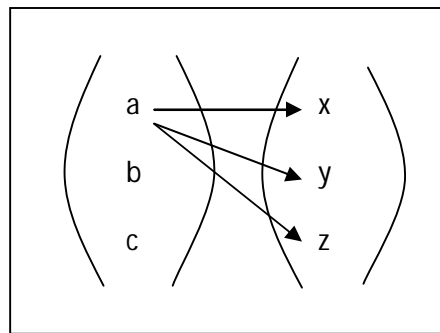
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C.



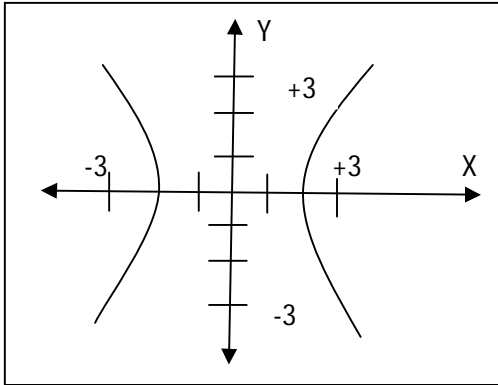
D.



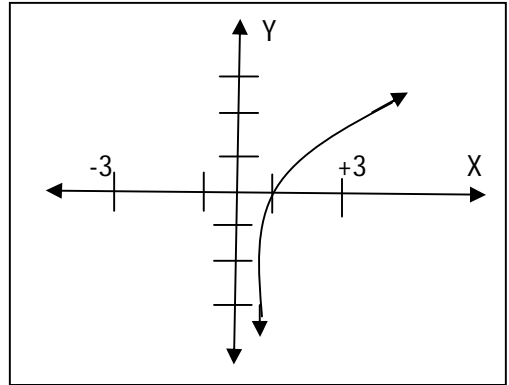
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Which of the graph is not a function?

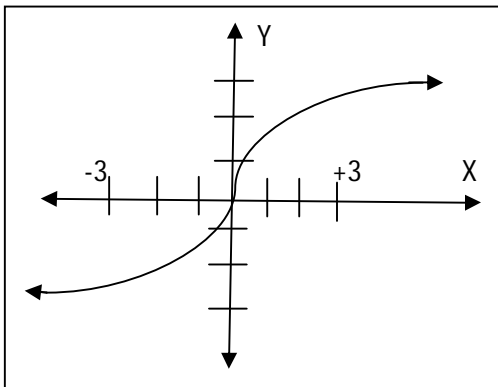
A.



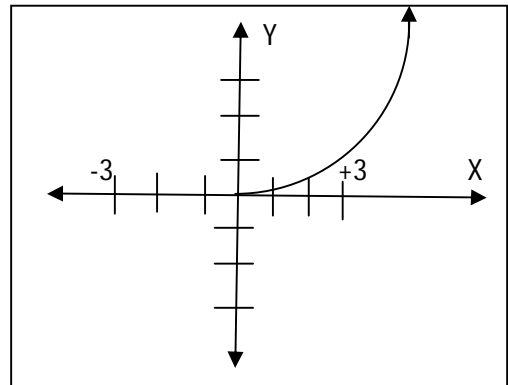
B.



C..



D..

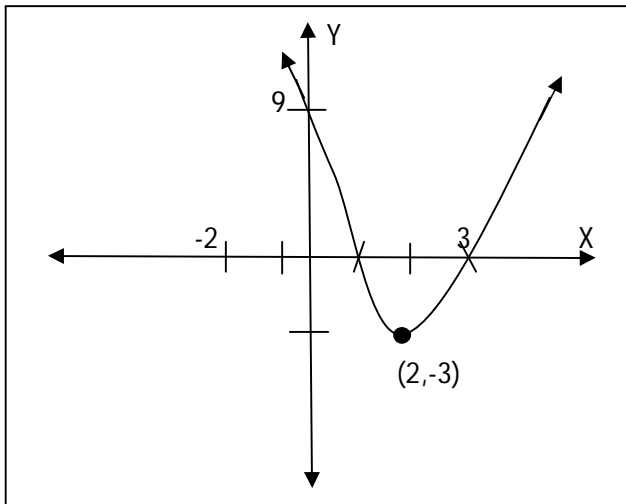


21) If $f(x) = \frac{x+2}{x-6}$, then what is the domain of f ?

- A) All real numbers
- B) $\{x \mid x \neq -2\}$
- C) $\{x \mid x \neq 6\}$
- D) $\{x \mid x \neq -2, x \neq 6\}$

22)

What is the domain of the graph drawn below?



- A) All real number
- B) $(-\infty, 0)$
- C) $\{x \mid x > 2\}$
- D) $[9, 2]$

23) The solution set of the inequality $x^2 - 4x - 12 \leq 0$ must be

- A) $\{x \mid -2 \leq x\}$
- B) $\{x \mid x \leq 6\}$
- C) $\{x \mid 6 \leq x \leq -2\}$
- D) $\{x \mid -2 \leq x \leq 6\}$

24) What is the horizontal asymptote of $f(x) = 2^x$.

- A) $x = 1$
- B) $x = 0$
- C) $y = 1$
- D) $y > 1$.

25) What is the y –intercept of $y^2 = x + 9$?

- A) $(0, -3), (0, 3)$
- B) $(-3,0)$
- C) $(-3,0), (3,0)$
- D) $(3,0)$

Part II: Free Response Questions

5 questions

Please show your work on each of the following five questions.

- 1) Ali and Bala decided to start a business . Ali invested \$24000 and Bala invested \$18000. They agreed to share the profit of the business in the same ratio as their investments. In 2003 , the total profit was \$10500.
 - a) Find Ali's share of the profit in 2003.
 - b) The total profit made in 2003 was 25% greater than in 2002 . find the total profit made in 2002.
 - c) The total profit made in 2004 was 15% greater than in 2003 . After sharing the profit , Bala sold his share to Ali for \$ 19800. Calculate Bala's total profit made in three years. [6 marks]

- 2) A plane flies 300 km on a bearing of 132° from airport. How far south and East is it from the airport? [4 marks]

- 3) The line $2x + 3y = 6$ meets the y -axis at A and the x -axis at B . C is the point such that $AB = BC$. CD is drawn perpendicular to AC to meet the line through A parallel to $5x + y = 6$ at D .
- Find the coordinates of A, B and C .
 - State the equations of CD and AD , and hence find the coordinates of D .
 - Calculate the area of the triangle ACD . [9 marks]
- 4) For the polynomial $f(x) = x^3 + x^2 - 12x$.
- Find x – and y –intercepts of the graph of f .
 - Determine whether the graph crosses or touches the x -axis at each x –intercept.
 - The graph of f will contain how many turning points? [3 marks]
- 5) A bag contains six red ball and four blue ball
- What is the probability that the second ball put in the box is blue:
 - If the first ball put in the box is red ?
 - If the first ball put in the box is blue?
 - What is the probability that the third ball put in the box is red:
If the first two ball put in the box are red ? [3 marks]