

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X EXAMINATION

MAY 2016

Mathematics Paper I

Time: 40 minutes Marks: 30

INSTRUCTIONS

1. Read each question carefully.
2. Answer the questions on the separate answer sheet provided. DO NOT write your answers on the question paper.
3. There are 100 answer numbers on the answer sheet. Use answer numbers 1 to 30 only.
4. In each question there are four choices A, B, C, D. Choose ONE. On the answer grid black out the circle for your choice with a pencil as shown below.

Correct Way		Incorrect Ways	
1		1	
		2	
		3	
		4	

Candidate's Signature

5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new circle.
6. DO NOT write anything in the answer grid. The computer only records what is in the circles.
7. You may use a simple calculator if you wish.

1. On simplification of $(x - y)(x + y) \div (x - y)^2$, we get
 - A. $(x - y)^3(x - y)$
 - B. $(x - y)(x + y)$
 - C. $\frac{(x - y)}{(x + y)}$
 - D. $\frac{(x + y)}{(x - y)}$

2. The highest common factor (H.C.F.) of $(x^2 + 2x + 1)$ and $(x + 2)$ is
 - A. 0
 - B. 1
 - C. $(x + 1)$
 - D. $(x + 2)(x^2 + 2x + 1)$

3. The square root of $(a^2 + 4a + 4) \times (a + 2)^2$ is
 - A. $\pm(a + 2)$
 - B. $\pm(a + 4)$
 - C. $\pm(a + 2)^2$
 - D. $\pm(a + 4)^2$

4. To resolve $\frac{3x - 7}{(3x + 2)^2(3x + 7)}$ into its partial fractions, the CORRECT form is
 - A. $\frac{A}{(3x + 2)^2} + \frac{B}{3x + 7}$
 - B. $\frac{A}{(3x + 2)^2} - \frac{B}{3x + 7}$
 - C. $\frac{A}{3x + 2} + \frac{B}{(3x + 2)^2} + \frac{C}{3x + 7}$
 - D. $\frac{A}{3x + 2} + \frac{Bx + C}{(3x + 2)^2} - \frac{D}{3x + 7}$

5. The solution set of the linear equation $\frac{ax - a}{a} = 0$, where $a \in R$ and $a \neq 0$, is
 - A. $\{0\}$
 - B. $\{1\}$
 - C. $\{2\}$
 - D. $\{-2\}$

6. The solution set of $x - \frac{1}{4} = \frac{3}{4}$ is

- A. $\{1\}$
- B. $\left\{\frac{1}{4}\right\}$
- C. $\left\{\frac{1}{2}\right\}$
- D. $\left\{1\frac{1}{4}\right\}$

7. The solution set of the equation $\sqrt{x+1} = -2$ is

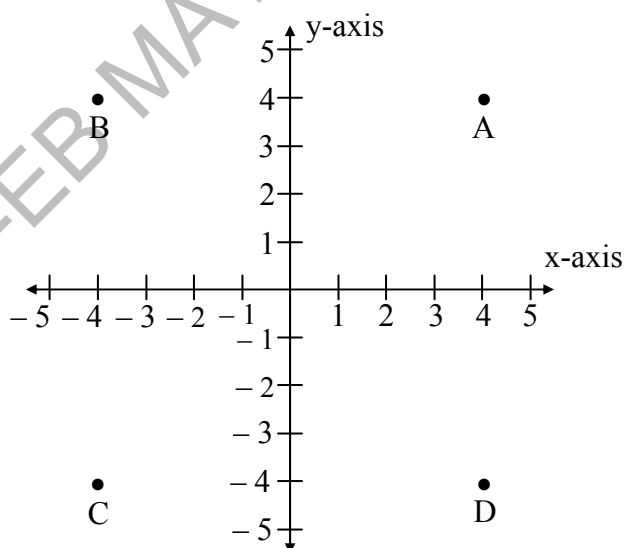
Note: $x \in R$

- A. $\{\}$
- B. $\{3\}$
- C. $\{-5\}$
- D. $\{-3\}$

8. The solution set of the equation $|x+1| = 1$ is

- A. $\{\}$
- B. $\{0\}$
- C. $\{0, 2\}$
- D. $\{0, -2\}$

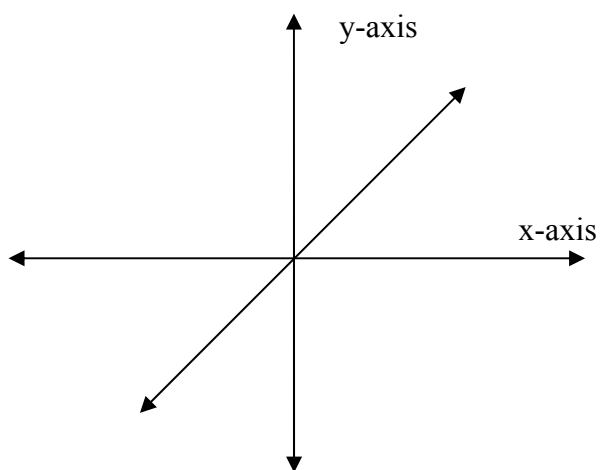
9. In the given diagram, the point $(4, -4)$ is represented by



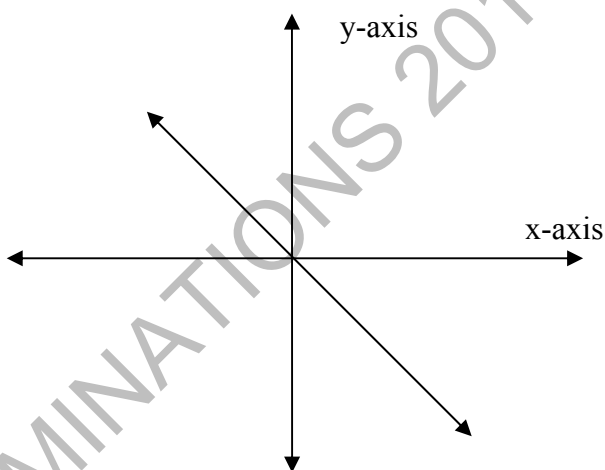
10. Which of the following lines passes through the point $(1, -2)$?

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

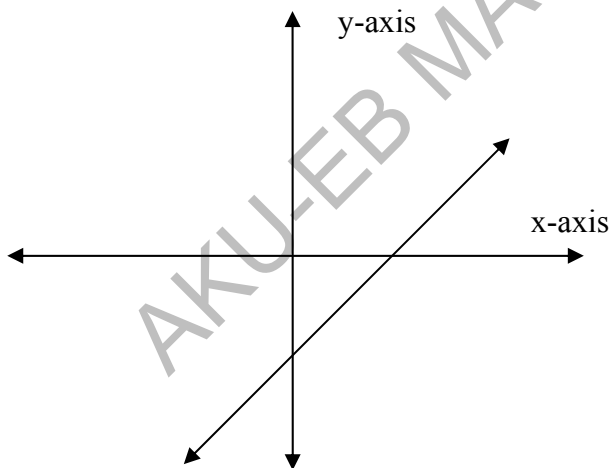
11. Which of the following is the CORRECT representation of the graph of $-y = x$?



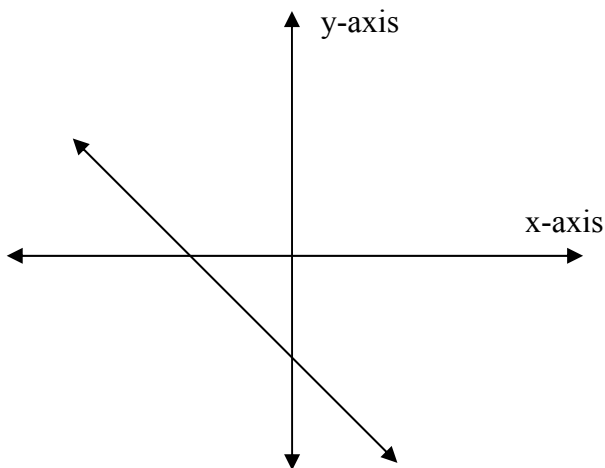
A.



B.



C.



D.

12. In standard form, the given quadratic equation $\frac{2x}{x^2 - 4} = 1$ can be written as

- A. $x^2 - 2x + 4 = 0$
- B. $x^2 - 2x - 4 = 0$
- C. $x^2 + 2x + 4 = 0$
- D. $x^2 + 2x - 4 = 0$

13. The solution set of $x^2 + x = 0$ is

- A. $\{1\}$
- B. $\{-1\}$
- C. $\{0, 1\}$
- D. $\{0, -1\}$

14. What should be added to $x^2 - 2x + \frac{3}{4}$ to make it a perfect square?

- A. $\frac{3}{4}$
- B. $\frac{1}{4}$
- C. $-\frac{1}{4}$
- D. $-\frac{3}{4}$

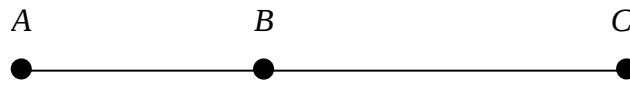
15. The distance between points (d, d) and $(d, -d)$ is equal to

- A. 0
- B. d
- C. $\sqrt{2}d$
- D. $2d$

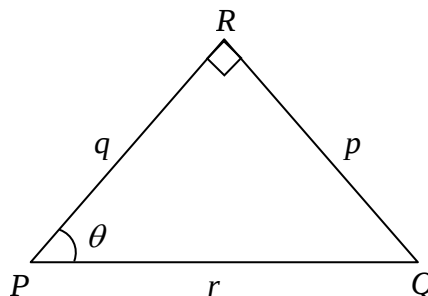
16. If a circle has centre at $O(0, 0)$ and the radius of the circle is 2 cm, then the distance between the end points of its diameter is

- A. 2 cm
- B. $2\sqrt{2}$ cm
- C. 4 cm
- D. $4\sqrt{2}$ cm

17. In the given diagram, if A , B and C are collinear points, then which of the following options is CORRECT?



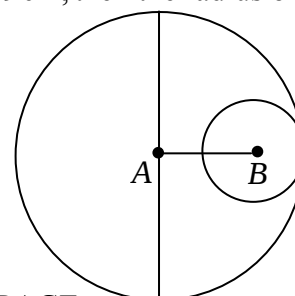
- A. $|AC| = |AB| - |BC|$
 B. $|AC| = |AB| + |BC|$
 C. $|BC| = |AB| + |AC|$
 D. $|BC| = |AB| - |AC|$
18. In the sexagesimal system 90 minutes is equal to
- A. 1 degree 30 minutes.
 B. 60 minutes 30 seconds.
 C. 2 degrees 15 minutes.
 D. 45 minutes 45 seconds.
19. In a circle, the arc length of 10.5 cm is intercepted by the central angle of measure 1.5 radians. The radius of the circle is
- A. 15.75 cm
 B. 15.75 cm/ rad
 C. 7 cm
 D. 7 cm/ rad
20. $\sin^2 \theta \operatorname{cosec} \theta$ is equal to
- A. $\cos \theta$
 B. $\sin \theta$
 C. $\sin \theta \tan \theta$
 D. $\cos \theta \cos \theta$
21. In the right-angled triangle PQR , $\sin^2 \theta$ is equal to



- A. $\frac{q^2}{r^2}$
 B. $\frac{p^2}{r^2}$
 C. $\frac{q^2}{p^2}$
 D. $\frac{p^2}{q^2}$

22. Which of the following lengths do NOT form a right angled triangle?
- 3, 4 and 5
 - $3\sqrt{2}$, $4\sqrt{2}$ and $5\sqrt{2}$
 - 6, 8 and 10
 - 5, 5 and 10
23. In a right angled triangle if the base is 9 cm and the perpendicular is 40 cm, then its hypotenuse will be
- 41 cm
 - 49 cm
 - $7\sqrt{31}$ cm
 - $41\sqrt{2}$ cm
24. In a right angled triangle if the hypotenuse is 9 cm and the perpendicular is 5 cm, then its base will be
- $\sqrt{106}$ cm
 - $2\sqrt{14}$ cm
 - 14 cm
 - 56 cm
25. Consider two chords in a circle each of them having length 5 cm. If one of the chords is at a distance of 7 cm from the centre of the circle, then the distance of the other chord from the centre of the circle will be
- 2 cm
 - 5 cm
 - 7 cm
 - 10 cm
26. If a straight line is drawn from the centre of a circle to bisect a chord, then the angle between the line and the chord is
- 0°
 - 60°
 - 90°
 - 180°
27. Two circles having centres A and B touch each other internally as shown in the figure. If the diameter of the circle with centre A is 24 cm and $m\widehat{AB} = 9^\circ$, then the radius of the circle with centre B will be

NOT TO SCALE

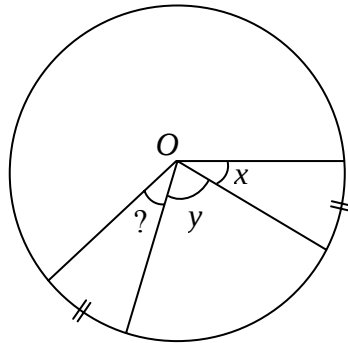


- 3 cm
- 4 cm
- 5 cm
- 7 cm

PLEASE TURN OVER THE PAGE

28. In the given circle with centre O , the measurement of the missing angle (?) is

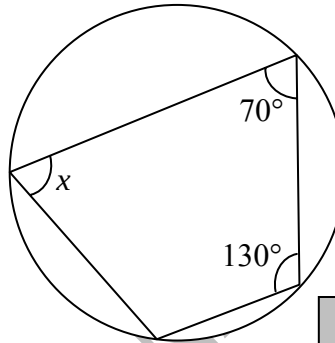
- A. x
- B. $90 - x$
- C. $180 - y$
- D. $360 - x - y$



NOT TO SCALE

29. In the given diagram the value of x is

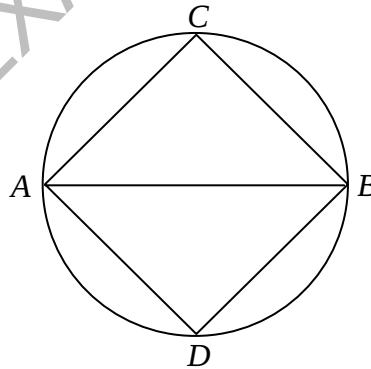
- A. 50°
- B. 70°
- C. 110°
- D. 130°



NOT TO SCALE

30. If $\overline{AB}$ is the diameter of a given circle, then $m\angle C + m\angle D$ is equal to

- A. 60°
- B. 90°
- C. 120°
- D. 180°



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