

UNIVERSITY OF BAMENDA HIGHER INSTITUTE OF COMMERCE
AND MANAGEMENT Competitive Entrance Examination Academic Year

2015 HICM PREPARED ENTRANCE QUESTIONS

PART TWO: MATHEMATICS

- The natural domain Of the function $f(x) = \frac{x^2+1}{\sqrt{x}-1}$ is A) $x \geq 7$ B) $x > 7$
C) $x < 7$ D) $x \leq 7$
- The equation of the circle in the Cartesian plane with radius 4 and centered at (-2, 3) is A) $(x-2)^2$ B) $(x-2)^2+(y+3)^2=4$ C) $(x+2)^2+(y-3)^2=16$
D) $(x+2)^2+(y-3)^2=4$ E) $x^2+y^2=16$
- Which of the following functions is an even function?
A) $y=x^4=3x^2$ B) $y=2x^3-4x$ C) $y=x-1$ D) $y=|x-1|$
- The vertical asymptotes to the graph of the function $y = \frac{x+4}{x^2+2x-8}$ are
A) $x = -4$ and $x = 2$ B) $x = -4$ C) $x = 2$ D) $x = -8$
- The limit $\lim_{x \rightarrow 4} \frac{\sqrt{x^2+9}}{x} + \frac{3}{x}$ equals A) 6 B) 4 C) 8 D) 2
- The solution of the equation $9^x = \sqrt[3]{3}$:
A) -1/4 B) -1/8 C) 0 D) 1/8
- The solution of the equation $\log_3(x^2 + 2x) = 1$ is:
A) $x = -1$ or $x = 0$ B) $x = -1$ or $x = 3$ C) $x = -3$ or $x = 1$ D) $x = 0$ or $x = 3$
- The equation of the tangent line to the graph of the function $y = x^{1/3}$ at the point (8, 2) is
A) $y = \frac{1}{6}(x - 2) + 8$ B) $y = \frac{1}{32}(x-8) + 2$ C) $y = \frac{4}{3}(x - 2) + 8$ D) $y = -\frac{1}{12}(x-2)+8$

9. The derivative of the function $y = x^3 e^x$ is

- A) $e^x(3x^2 + x^3)$ B) $e^x(2x^3 + x^3)$ C) $e^x(2x^3 + x^2)$ D) $e^x(3x^3 + x^3)$

10. Given that the initial value problem $y' = y^2 x + y^2$ and $y(0) = 2$, the value of $y(3)$ is A) 2 B) 16 C) -6 D) -1/7

12. The value of the definite integral $\int_4^2 (2x - 5)e^{(2x^2 - 5x + 6)} dx$ is

- A) $e^2 + 1$ B) $e^2 - 1$ C) $1 - e^2$ D) $2e - 1$

13. The value of the definite integral $\int_4^2 t e^{\frac{1}{2}} dt$ is A) $8e - 4$ B) 14 C) $\frac{1}{2} e^{\frac{1}{2}}$

D) 4

14. The length of the arc cut off by an angle of $\frac{\pi}{3}$ radians inscribed in a circle of radius 10 is

- A) $20x$ B) $\frac{50x}{3}$ C) $6x$ D) $\frac{50}{3x}$

15. If $y = \ln(2 + \sin x) + \sec^2 x$ then $\frac{dy}{dx}$ is

- A) $\frac{1}{2 + \sin x} + 2 \sec x$ B) $\ln(2 \cos x) + \tan x$ C) $\cos x^2 + \cos + 2 \sec x \tan x$

16. $\cos \frac{7\pi}{12}$ simplifies to

- A) $\frac{\sqrt{6}}{2} - \frac{\sqrt{2}}{2}$ B) $\frac{\sqrt{6}}{4} + \frac{\sqrt{2}}{4}$ C) $\frac{\sqrt{2}}{4} - \frac{\sqrt{6}}{4}$