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MIDTERM EXAMINATION
Fall 2008
MTH101- Calculus And Analytical Geometry (Session - 2)

Question No: 1 (Marks: 1) - Please choose one

Consider two function $f(x)=x^2 and g(x)=\sqrt{x}$ then $fog(x)=$ .....

- ▶ x
- ▶ x^2
- ▶ $\sqrt{x}$
- ▶ None of these

Question No: 2 (Marks: 1) - Please choose one

Natural domain of $\frac{(x^2-4)}{(x-2)}$ is

- ▶ $(-\infty,2)U(2,+\infty)$
- ▶ $(-\infty,2)$
- ▶ $(-\infty,0)$
- ▶ None of these

Question No: 3 (Marks: 1) - Please choose one

The solution of the inequality $|x-3|<3$ is

- ▶ (-1,7)
- ▶ (1,7)
- ▶ (1,-7)
- ▶ None of these

Question No: 4 (Marks: 1) - Please choose one

If a quantity y depends on another quantity x in such a way that each value of x determines exactly one value of y , we say that y is …… of x

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- relation
- none of these
- function
- not function

Question No: 5 (Marks: 1) - Please choose one

The set of all points in the coordinate plane which are at a fixed distance away from a given fixed point represents

- Parabola
- Straight line
- Circle
- None of these

Question No: 6 (Marks: 1) - Please choose one

Let L_1 and L_2 be non vertical lines with slopes m_1 and m_2 ,respectively Both the lines are perpendicular if and only if

- $m1(-m2) = 1$
- $m1m2 = -1$
- $m1 = -\frac{1}{m2}$
- All of these

Question No: 7 (Marks: 1) - Please choose one

The equation $(x+4)^2+(y-1)^2=6$ represents a circle having center at ……. and radius .....

- $(-4,1),\sqrt{6}$
- $(-4,1),6$
- $(-4,-1),\sqrt{6}$
- None of these

Question No: 8 (Marks: 1) - Please choose one

The base of the natural logarithm is

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- 2.71
- 10
- 5
- None of these

Question No: 9 (Marks: 1) - Please choose one

$\frac{d}{dx}[f(g(x))] =$

- $f'(g(x)).g'(x)$
- $f'(g(x))+g'(x)$
- $f'(g(x)).f'(x)$
- None of these

Question No: 10 (Marks: 1) - Please choose one

$\frac{dy}{dx} =$

If y=f(g(h(x))) and u=g(h(x)) and v=h(x) then

- $\frac{dy}{du}.\frac{du}{dv}.\frac{dv}{dx}$
- $\frac{dy}{du}+\frac{du}{dv}+\frac{dv}{dx}$
- $\frac{dy}{dx}.\frac{du}{dv}.\frac{dv}{du}$
- None of these

Question No: 11 (Marks: 1) - Please choose one

The tan(x) is discontinuous at the points where

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► Cos(x) =0
► Sin(x) =0
► Tan(x) =0
► None of these

Question No: 12 (Marks: 1) - Please choose one

$\lim_{x \to 0} \frac{\sin x}{x}$

Equals to

► 1
► 2
► 3
► 0

Question No: 13 (Marks: 1) - Please choose one

Both Sin(x) and Cos(x) have the same limit and function value at x=0 so both are ..... at x=0

► Continuous
► Discontinuous
► Linear
► None of these

Question No: 14 (Marks: 1) - Please choose one

For a function f(x) to be continuous on interval (a,b) the function must be continuous

► At all point in (a,b)
► Only at a and b
► At mid point of a and b
► None of these

Question No: 15 (Marks: 1) - Please choose one

π is called

► An integer
► A rational number
► An irrational number

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- A natural number

Question No: 16 (Marks: 1) - Please choose one

The graph of the equation $y = x^2 - 4x + 5$ will represent

- Parabola
- Ellipse
- Straight line
- Two straight lines

Question No: 17 (Marks: 2)

Let $f(x) = \frac{1}{(x-1)}$. Find the average rate of change of *f* over the interval [3, 5].

Question No: 18 (Marks: 2)

Solve this quadratic equation: $ax^2 + bx = 0$

Question No: 19 (Marks: 3)

Find $\frac{dy}{dx}$ if $x^3 + y^3 = 4$

Question No: 20 (Marks: 5)

Find an equation of the line through A (-6, 5) having slope 7.

Question No: 21 (Marks: 10)

Show that the points A(0,2) ; B($\sqrt{3}, -1$) ; C(0,-2) are vertices of right triangle.