SRM INSTITUTE OF SCIENCE AND TECHNOLOGY RAMAPURAM CAMPUS **DEPARTMENT OF MATHEMATICS** SURPRISE TEST - 4

* Required

Answer ALL Questions

Each question carries ONE mark.

1. *

The curvature of the straight line is

(A) 1

(B) 2

(C) -1

(D) 0

2. *

The radius of curvature in polar coordinates is

(A)
$$\rho = \frac{\left(r^2 + r'^2\right)^{\frac{3}{2}}}{r^2 - rr' + 2r'^2}$$
 (B) $\rho = \frac{\left(r^2 - r'^2\right)^{\frac{3}{2}}}{r^2 - rr' + 2r'^2}$

(C)
$$\rho = \frac{\left(r^2 - r''^2\right)^{\overline{2}}}{r^2 - rr' + 2r'^2}$$
 (D) $\rho = \frac{\left(r^2 + r'^2\right)^{\overline{2}}}{r^2 - rr'' + 2r'^2}$

3. *

The envelope of the family of curves $A \alpha^2 + B \alpha + C = 0$ (a is parameter) is

- (A) $B^2 + 4AC = 0$ (B) $B^2 4AC = 0$
- (C) $B^2 + AC = 0$ (D) $B^2 AC = 0$

 \bigcirc 0

() D

4. *

The equation of circle of curvature at any point (x, y) with center of curvature (\bar{x}, \bar{y}) and radius of curvature ρ is

(A)
$$(x+\overline{x})^2 + (y+\overline{y})^2 = \rho^2$$
 (B) $(x-\overline{x})^2 + (y-\overline{y})^2 = \rho^2$

(C)
$$(x-\overline{x})^2 - (y+\overline{y})^2 = \rho^2$$
 (D) $(x+\overline{x})^2 + (y+\overline{y})^2 = \rho^2$

(A

E

 \bigcirc

5. *

The locus of centre of curvature is called

(A) Involute

(B) Evolute

(C) Radius of curvature

(D) Envelope

B

 \bigcirc

O D

6. *

The curvature at any point of the circle is equal to___ of its radius.

(A) same

- (B) ellipse
- (C) reciprocal
- (D) constant

7. *

The value of Γ

(A)

E

1/26/2021

8. *

The value of $\int_{0}^{\infty} e^{-x} x^4 dx$ is

(A) 1

(B) 24

(C) 1/2

(D) $\frac{-8\sqrt{\pi}}{2}$

- E
- \bigcirc c

9. *

If n is a positive integer, then $\Gamma(n+1) =$

(A) (n+1)!

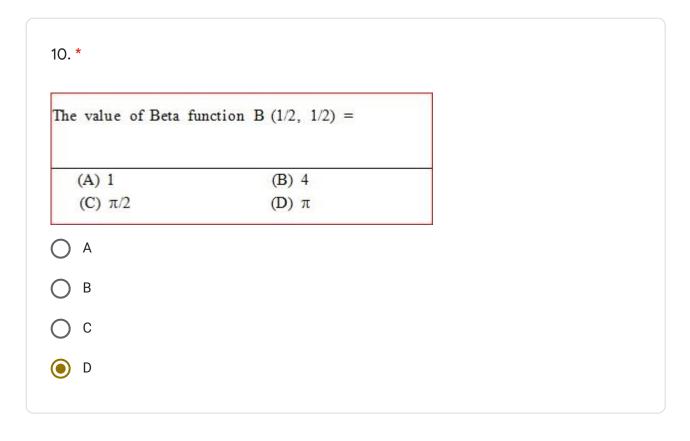
(B) n!

(C) 2n!

(D) (n-1)!

- () A
- E
- \bigcirc
- \bigcirc D

E



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