

1. The gradient of the curve $y = 2x^3 - 3x^2 - 12x + 8$ at $x = 0$ is

- a) -12
- b) 12
- c) 0
- d) None of these

2. If $f(x) = e^{ax^2+bx+c}$ the $f'(x)$ is

- a) e^{ax^2+bx+c}
- b) $e^{ax^2+bx+c} (2ax + b)$
- c) $2ax + b$
- d) None of these

3. If $xy = 1$ then $y^2 + dy / dx$ is equal to

- a) 1
- b) 0
- c) -1
- d) None of these

4. Given $x = 2t + 5$, $y = t^2 - 2$; $\frac{dy}{dx}$ is calculated as

- a) t
- b) $-1/t$
- c) $1/t$
- d) None of these

5. The derivative of $x^2 \log x$ is

- a) $1 + 2 \log x$
- b) $x (1 + 2 \log x)$
- c) $2 \log x$
- d) None of these

6. If $f(x) = x^2 - 6x + 8$ then $f'(5) - f'(8)$ is equal to

- a) $f'(2)$
- b) $3 f'(2)$
- c) $2 f'(2)$
- d) None of these

7. If $f(x) = x^k$ and $f'(1) = 10$ the value of k is

- a) 10
- b) -10
- c) $1/10$
- d) None of these

8. If $y = \sqrt{x^2 + m^2}$ then $y y_1$ (where $y_1 = dy / dx$) is equal to

- a) $-x$
- b) x
- c) $1/x$
- d) None of these

9. Evaluate $\int x(x^2 + 4)^5 dx$

- a) $(x^2 + 4)^6 + k$
- b) $1/12 (x^2 + 4)^6 + k$
- c) $(x^2 + 4)^6 / + k$
- d) None of these

10. $\int \log x \, dx$ is equal to

- a) $x \log x$
- b) $x \log x - x^2 + k$
- c) $x \log x + k$

- d) None of these
11. Evaluate $\int_0^1 (2x^2 - x^3) dx$ and the value is
- $4/3 + k$
 - $5/12$
 - $-4/3$
 - None of these
12. Evaluate $\int_2^4 (3x - 2)^2 dx$ and the value is
- 104
 - 100
 - 10
 - None of these
13. $\int_1^2 \frac{2x}{1+x^2} dx$ is equal to
- $\log_e (5/2)$
 - $\log_e 5 - \log_e 2 + k$
 - $\log_e (2/5)$
 - None of these
14. The equation of the curve which passes through the point (1, 3) and has the slope $4x - 3$ at any point (x, y) is
- $y = 2x^3 - 3x + 4$
 - $y = 2x^2 - 3x + 4$
 - $x = 2y^2 - 3x + 4$
 - None of these
15. $\int (x-1)e^x / x^2 dx$ is equal to
- $e^x / x + k$
 - $e^{-x} / x + k$
 - $-e^x / x + k$
 - None of these
16. $\int \frac{e^x (x \log x + 1)}{x} dx$ is equal to
- $e^x \log x + k$
 - $e^x + k$
 - $\log x + k$
 - None of these
17. If $f(x) = 2x^2 - 5x + 4$ then $2f(x) = f(2x)$ for
- $x = 1$
 - $x = -1$
 - $x = \pm 1$
 - None of these
18. $\lim_{x \rightarrow 1/2} \left(\frac{8x^3 - 1}{6x^2 - 5x + 1} \right)$ is equal to
- 5
 - 6
 - 6
 - None of these

19. $\lim_{x \rightarrow 0} \frac{\sqrt{1+2x^2} - \sqrt{1-2x^2}}{x^2}$ is equal to

- a) 2
- b) -2
- c) $\frac{1}{2}$
- d) None of these

20. $\lim_{x \rightarrow \infty} \frac{2x^2 + 7x + 5}{4x^2 + 3x + 1}$ is equal to 1 where 1 is

- a) -1/2
- b) $\frac{1}{2}$
- c) 2
- d) None of these

21. A function $f(x)$ defined as follows $f(x) = x + 1$ when $x \leq 1$
 $= 3 - px$ when $x > 1$

The value of p for which $f(x)$ is continuous at $x = 1$ is

- a) -1
- b) 1
- c) 0
- d) None of these

22. $\lim_{x \rightarrow 3} \left(\frac{x^n - 3^n}{x - 3} \right) = 108$ then the value of n is

- a) 4
- b) -4
- c) 1
- d) None of these

23. $f(x) = \frac{(x^2 - 2x - 3)}{(x + 1)}$ $x \neq -1$ and $f(x) = k$ when $x = -1$ If $f(x)$ is continuous at $x = -1$, The value of k

will be

- a) -1
- b) 1
- c) -4
- d) None of these

24. The inverse function f^{-1} of $f(x) = 2x$ is

- a) $1/2x$
- b) $\frac{x}{2}$
- c) $1/x$
- d) None of these

25. If $f(x) = x + 3$, $g(x) = x^2$, then $f \circ g(x)$ is

- a) $x^2 + 3$
- b) $x^2 + x + 3$
- c) $(x + 3)^2$
- d) None of these

Approved

By DC SIR at 12 Dec 14 19:29