Yakeen NEET 2.0 2026

MahaManthan ASSIGNMENT
Basic Maths and Calculus (Mathematical Tools)

Assignment-01
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1. $\int 0\,dx = C$, where C is the constant of integration.
True/False

2. $\int x^n dx = \frac{x^{n+1}}{n+1} + C$ is valid for all real values of n.
True/False

3. The area under the curve can be negative.
True/False

4. If a function $f(x)$ is always positive, then its integral is always increasing. **True/False**

5. $\int \frac{1}{r^2} dr = -\frac{1}{r} + C$ which is used in both electrostatics and gravitation. **True/False**

6. The area under a sine wave over a complete cycle is zero. **True/False**

7. Integrating the square of sine or cosine over a full period gives a nonzero average. **True/False**

8. The area under a curve $y = f(x)$ from $x = a$ to $x = b$ is given by $\int_a^0 f(x)dx$. **True/False**

9. $\int k.f(x)dx = k\int f(x)dx$, where k is a constant.
True/False

10. Integration is a way to add small pieces together to find a total. **True/False**

11. Integration is only used in maths, not in real life.
True/False

12. Learning integration now will help me later in physics. **True/False**

13. The slope of the line $y = -2x + 3$ is negative, so it goes downward from left to right. **True/False**

14. The x-intercept of the line $y = mx + c$ is $x = c/m$.
True/False

15. Two lines are parallel if their slopes are equal.
True/False

16. Two lines are perpendicular if product of their slopes is equal to 1. **True/False**

17. A line passing through origin always has y-intercept 0. **True/False**

18. The equation $3x + 4y = 0$ represents a line that passes through the origin. **True/False**

19. For the parabola $y = ax^2$, the axis of symmetry is the y-axis. **True/False**

20. The graph of $y = -x^2$ is concave upward.
True/False

21. The graph of $y = x^2$ is a U-shape. **True/False**

22. All parabolas open upwards. **True/False**

23. Parabolas are important in physics because projectiles follow this path. **True/False**

24. A circle can intersect the x-axis at more than 2 points. **True/False**

25. The graph of $x^2 + y^2 = 0$ represents a point of zero radius at the origin. **True/False**

26. The diameter of the circle $x^2 + y^2 = 49$ is 7.
True/False

27. All circles are symmetric about both x and y-axes.
True/False

28. An ellipse has two foci and two axes (major and minor). **True/False**

29. A circle is a special case of an ellipse when $a = b$. **True/False**

30. The distance between the foci increases as the ellipse becomes more stretched. **True/False**

31. The ellipse can never pass through the origin. **True/False**

32. The rectangular hyperbola never touches either axis. **True/False**

33. As $x \to 0^+$, $y \to \infty$ in the graph of $xy = c$. **True/False**

34. The rectangular hyperbola passes through the origin. **True/False**

35. The rectangular hyperbola always lies in only one quadrant. **True/False**

36. The identity $\sin^2 \theta + \cos^2 \theta = 1$ holds for all real values of θ. **True/False**

37. The maximum value of sin(θ) and cos(θ) is 2. **True/False**

38. The function sin(θ) is periodic with period 360°. **True/False**

39. tan(θ) is undefined at θ = 90°. **True/False**

40. The graph of sin(θ) oscillates between –1 and +1. **True/False**

41. If sin(θ) = 3/5, then cos(θ) = 4/5. **True/False**

42. tan(θ) = sin(θ)/cos(θ) is undefined when cos(θ) = 0. **True/False**

43. sin(2θ) = 2sin θ co sθ is valid only for acute angles. **True/False**

44. For θ in the third quadrant, both sine and cosine are positive. **True/False**

45. If sin (θ) + cos (θ) = 1, then $\sin^2$ (θ) + $\cos^2$ (θ) = 1 still holds. **True/False**

46. The derivative of a constant function is zero. **True/False**

47. If $f(x) = \sin(x^2)$, then $f'(x) = 2x \cos(x^2)$. **True/False**

48. If $f(x)$ is increasing, then $f'(x) > 0$ for all x. **True/False**

49. The product rule states that $\frac{d}{dx}(uv) = u'v + uv'$. **True/False**

50. The derivative of tan (x) is $\sec^2(x)$. **True/False**

51. If $f'(x) = 0$ and $f''(x) > 0$, then x is a local minimum. **True/False**

52. If $f'(x) = 0$ and $f''(x) < 0$, then x is a local minimum. **True/False**

53. The point where a function changes from increasing to decreasing is called a maximum. **True/False**

54. Slope of upward parabola is positive and increasing. **True/False**

55. Sum of root of quadratic equation $ax^2 + bx + c = 0$ is b/a. **True/False**

56. Differentiation of sin 30° is cos 30°. **True/False**

57. Integration of constant function is zero. **True/False**

58. Magnitude of slope of rectangular hyperbola is decreasing **True/False**

59. $y = 2x^2 - 4x$ slope of slope at $x = 1$ is positive. **True/False**

60. Differentiation of e^{π} is e^{π}. **True/False**

61. $\frac{1}{(0.4)^{\text{infinity}}}$ is zero. **True/False**

62. $\log e^{xy} = \log e^{x} . \log e^{y}$ **True/False**

ANSWER KEY

1. True
2. False
3. True
4. True
5. True
6. True
7. True
8. True
9. True
10. True
11. False
12. True
13. True
14. False (It's $x = -c/m$)
15. True
16. False
17. True
18. True
19. True
20. False (It's downward)
21. True
22. False (If $a < 0$, it opens downwards)
23. True
24. False
25. True
26. False (Diameter is 14)
27. True
28. True
29. True
30. True
31. False
32. True
33. True
34. False
35. False
36. True
37. False (maximum is 1)
38. True
39. True
40. True
41. False (depends on quadrant, and Pythagorean identity)
42. True
43. False (valid for all θ)
44. False (both are negative)
45. True
46. True
47. True
48. False (It can be 0 at some points)
49. True
50. True
51. True
52. True
53. True
54. True
55. False
56. False
57. False
58. True
59. True
60. False
61. False
62. False

PW Web/App - https://smart.link/7wwosivoicgd4

Library- https://smart.link/sdfez8ejd80if