

JNANAPEETA DCET ACADEMY

LETS DREAM IT.

JNANAPEETA DCET ACADEMY

5. INTEGRAL CALCULUS AND APPLICATIONS

1. What is the integral of a constant function?

- a) x
- b) $x + C$
- c) The integral does not exist
- d) Undefined

Answer: b) $x + C$

2. What is the integral of x^n , where n is a constant?

- a) $(x^{(n+1)})/(n+1) + C$
- b) $x^{(n+1)} + C$
- c) $x^n + C$
- d) $(n+1)x^n + C$

Answer: a) $(x^{(n+1)})/(n+1) + C$

3. What is the integral of e^x ?

- a) e^x
- b) $e^x + C$
- c) $e^{(x+1)} + C$
- d) The integral does not exist

Answer: b) $e^x + C$

4. What is the integral of $1/x$?

- a) $\ln|x| + C$
- b) x
- c) $1/(x+1) + C$
- d) The integral does not exist

Answer: a) $\ln|x| + C$

CONTACT FOR DCET CLASSES 9108841633

Page 1

Visit Jnanapeeta for tech YouTube channel
9108841633

JNANAPEETA DCET ACADEMY

LETS DREAM IT.

JNANAPEETA DCET ACADEMY

5. What is the integral of $\sin(x)$?

a) $-\cos(x) + C$

b) $\cos(x) + C$

c) $\sin(x) + C$

d) The integral does not exist

Answer: a) $-\cos(x) + C$

6. What is the integral of $\cos(x)$?

a) $\sin(x) + C$

b) $-\sin(x) + C$

c) $\cos(x) + C$

d) The integral does not exist

Answer: b) $-\sin(x) + C$

7. What is the integral of $\tan(x)$?

a) $-\ln|\cos(x)| + C$

b) $\ln|\sin(x)| + C$

c) $\ln|\cos(x)| + C$

d) The integral does not exist

Answer: a) $-\ln|\cos(x)| + C$

8. What is the integral of a constant multiplied by a function?

a) The constant times the integral of the function

b) The integral of the constant times the function

c) The product of the constant and the function

d) The integral does not exist

Answer: a) The constant times the integral of the function

CONTACT FOR DCET CLASSES 9108841633

Page 2

Visit Jnanapeeta for tech YouTube channel
9108841633

JNANAPEETA DCET ACADEMY

LETS DREAM IT.

JNANAPEETA DCET ACADEMY

9. What is the integral of a sum of functions?

- a) The sum of the integrals of the functions
- b) The integral of the sum of the functions
- c) The product of the functions
- d) The integral does not exist

Answer: a) The sum of the integrals of the functions

10. What is the integral of a difference of functions?

- a) The difference of the integrals of the functions
- b) The integral of the difference of the functions
- c) The product of the functions
- d) The integral does not exist

Answer: b) The integral of the difference of the functions

11. What is the integral of $f(x) = 3x^2 + 2x - 1$?

- a) $x^3 + x^2 - x + C$
- b) $x^3 + x^2 + C$
- c) $3x^3 + x^2 - x + C$
- d) $3x^3 + 2x + C$

Answer: a) $x^3 + x^2 - x + C$

12. What is the integral of $f(x) = 4x^3 - 2x^2 + 5x - 3$?

- a) $x^4 - (2/3)x^3 + (5/2)x^2 - 3x + C$
- b) $x^4 - x^3 + (5/2)x^2 - 3x + C$
- c) $4x^4 - 2x^3 + (5/2)x^2 - 3x + C$
- d) $4x^4 - (2/3)x^3 + (5/2)x^2 - 3x + C$

Answer: a) $x^4 - (2/3)x^3 + (5/2)x^2 - 3x + C$

CONTACT FOR DCET CLASSES 9108841633

Page 3

Visit Jnanapeeta for tech YouTube channel
9108841633

JNANAPEETA DCET ACADEMY

LETS DREAM IT.

JNANAPEETA DCET ACADEMY

13. What is the integral of $f(x) = e^{(2x+1)}$?

a) $(1/2)e^{(2x+1)} + C$

b) $e^{(2x)} + C$

c) $(1/2)e^{(2x)} + C$

d) The integral does not exist

Answer: a) $(1/2)e^{(2x+1)} + C$

14. What is the integral of $f(x) = \sin(3x-2)$?

a) $-(1/3)\cos(3x-2) + C$

b) $(1/3)\cos(3x) + C$

c) $-(1/3)\cos(3x) + C$

d) The integral does not exist

Answer: a) $-(1/3)\cos(3x-2) + C$

15. What is the integral of $f(x) = \cos(4x+3)$?

a) $(1/4)\sin(4x+3) + C$

b) $-(1/4)\sin(4x) + C$

c) $(1/4)\sin(4x) + C$

d) The integral does not exist

Answer: a) $(1/4)\sin(4x+3) + C$

16. What is the integral of $f(x) = \tan(5x-4)$?

a) $-(1/5)\ln|\cos(5x-4)| + C$

b) $(1/5)\ln|\sin(5x)| + C$

c) $-(1/5)\ln|\cos(5x)| + C$

d) The integral does not exist

Answer: a) $-(1/5)\ln|\cos(5x-4)| + C$

CONTACT FOR DCET CLASSES 9108841633

Page 4

Visit Jnanapeeta for tech YouTube channel
9108841633

JNANAPEETA DCET ACADEMY

LETS DREAM IT.

JNANAPEETA DCET ACADEMY

17. What is the integral of $f(x) = x \sin(x^2)$?

- a) $(1/2)\cos(x^2) + C$
- b) $(1/2)\sin(x^2) + C$
- c) $(1/2)\cos(x^2) + C$
- d) The integral does not exist

Answer: b) $(1/2)\sin(x^2) + C$

18. What is the integral of $f(x) = 2x \cos(x^2)$?

- a) $\sin(x^2) + C$
- b) $\cos(x^2) + C$
- c) $\sin(x^2) + C$
- d) The integral does not exist

Answer: c) $\sin(x^2) + C$

19. What is the integral of $f(x) = \ln(x)/x$?

- a) $(1/2)\ln^2(x) + C$
- b) $\ln(x) + C$
- c) $(1/2)\ln(x) + C$
- d) The integral does not exist

Answer: a) $(1/2)\ln^2(x) + C$

20. What is the integral of $f(x) = e^x \cos(x)$?

- a) $e^x \sin(x) + C$
- b) $e^x \cos(x) + C$
- c) $e^x (\sin(x) + \cos(x)) + C$
- d) The integral does not exist

Answer: a) $e^x \sin(x) + C$

CONTACT FOR DCET CLASSES 9108841633

Page 5

Visit Jnanapeeta for tech YouTube channel
9108841633

JNANAPEETA DCET ACADEMY

LETS DREAM IT.

JNANAPEETA DCET ACADEMY

21. What is the integral of $f(x) = x / (x^2 + 1)$?

- a) $(1/2)\ln(x^2 + 1) + C$
- b) $\ln(x) + C$
- c) $(1/2)\ln(x) + C$
- d) The integral does not exist

Answer: a) $(1/2)\ln(x^2 + 1) + C$

22. What is the integral of $f(x) = \sqrt{x} + 1/x$?

- a) $(2/3)x^{3/2} + \ln(x) + C$
- b) $(2/3)x^{3/2} + x + C$
- c) $x^{3/2} + \ln(x) + C$
- d) The integral does not exist

Answer: a) $(2/3)x^{3/2} + \ln(x) + C$

23. What is the integral of $f(x) = 3\sin(2x) + 4\cos(3x)$?

- a) $-3\cos(2x) + 4\sin(3x) + C$
- b) $3\cos(2x) + 4\sin(3x) + C$
- c) $3\sin(2x) - 4\cos(3x) + C$
- d) The integral does not exist

Answer: b) $3\cos(2x) + 4\sin(3x) + C$

24. What is the integral of $f(x) = e^x \sin(x) + e^x \cos(x)$?

- a) $e^x \sin(x) - e^x \cos(x) + C$
- b) $e^x \sin(x) + e^x \cos(x) + C$
- c) $e^x (\sin(x) + \cos(x)) + C$
- d) The integral does not exist

Answer: b) $e^x \sin(x) + e^x \cos(x) + C$

CONTACT FOR DCET CLASSES 9108841633

Page 6

Visit Jnanapeeta for tech YouTube channel
9108841633

JNANAPEETA DCET ACADEMY

LETS DREAM IT.

JNANAPEETA DCET ACADEMY

25. What is the integral of $f(x) = x^2 * e^x$?

- a) $x^2 * e^x - 2x * e^x + 2e^x + C$
- b) $x^2 * e^x + 2x * e^x + 2e^x + C$
- c) $x^2 * e^x + 2x * e^x + e^x + C$
- d) The integral does not exist

Answer: a) $x^2 * e^x - 2x * e^x + 2e^x + C$

26. What is the integral of $3x^2 + 2x + 1$ with respect to x ?

- a) $x^3 + x^2 + x + C$
- b) $x^3 + x^2 + C$
- c) $3x^3 + x^2 + x + C$
- d) $3x^3 + x^2 + C$

Answer: a) $x^3 + x^2 + x + C$

27. What is the integral of $\sin(x)$ with respect to x ?

- a) $-\cos(x) + C$
- b) $\cos(x) + C$
- c) $\sin(x) + C$
- d) $-\sin(x) + C$

Answer: a) $-\cos(x) + C$

28. What is the integral of e^x with respect to x ?

- a) $e^x + C$
- b) $e^{(x+1)} + C$
- c) $e^{(x-1)} + C$
- d) $e^{(x^2)} + C$

Answer: a) $e^x + C$

CONTACT FOR DCET CLASSES 9108841633

Page 7

Visit Jnanapeeta for tech YouTube channel
9108841633

JNANAPEETA DCET ACADEMY

LETS DREAM IT.

JNANAPEETA DCET ACADEMY

29. What is the integral of $1/x$ with respect to x ?

- a) $\ln|x| + C$
- b) $\ln(x) + C$
- c) $e^x + C$
- d) $1/x + C$

Answer: a) $\ln|x| + C$

30. What is the integral of $2x$ with respect to x ?

- a) $x^2 + C$
- b) $2x + C$
- c) $x + C$
- d) $2/x + C$

Answer: a) $x^2 + C$

31. What is the integral of $1/(x^2 + 1)$ with respect to x ?

- a) $\tan^{-1}(x) + C$
- b) $\cot^{-1}(x) + C$
- c) $\sec^{-1}(x) + C$
- d) $\sin(x) + C$

Answer: a) $\tan^{-1}(x) + C$

32. What is the integral of $\cos(3x)$ with respect to x ?

- a) $(1/3)\sin(3x) + C$
- b) $(1/3)\cos(3x) + C$
- c) $-\sin(3x) + C$
- d) $-\cos(3x) + C$

Answer: b) $(1/3)\cos(3x) + C$

CONTACT FOR DCET CLASSES 9108841633

Page 8

Visit Jnanapeeta for tech YouTube channel
9108841633

JNANAPEETA DCET ACADEMY

LETS DREAM IT.

JNANAPEETA DCET ACADEMY

33. What is the integral of $5e^{(2x)}$ with respect to x ?

- a) $10e^{(2x)} + C$
- b) $2e^{(5x)} + C$
- c) $(5/2)e^{(2x)} + C$
- d) $(1/2)e^{(10x)} + C$

Answer: c) $(5/2)e^{(2x)} + C$

34. What is the integral of x^3 with respect to x ?

- a) $x^4 + C$
- b) $x^3 + C$
- c) $(1/4)x^4 + C$
- d) $(1/3)x^2 + C$

Answer: c) $(1/4)x^4 + C$

35. What is the integral of $(2x + 1)(x^2 + x +$

1) with respect to x ?

- a) $(1/3)x^3 + (1/2)x^2 + x + C$
- b) $(1/2)x^3 + x^2 + x + C$
- c) $(2/3)x^3 + (1/2)x^2 + x + C$
- d) $(2/3)x^4 + (1/2)x^3 + x + C$

Answer: a) $(1/3)x^3 + (1/2)x^2 + x + C$

36. What is the integral of $\cos^2(x)$ with respect to x ?

- a) $\sin^2(x) + C$
- b) $\cos(x) + C$
- c) $x + \sin(x) + C$
- d) $(1/2)x + (1/2)\sin(2x) + C$

Answer: d) $(1/2)x + (1/2)\sin(2x) + C$

CONTACT FOR DCET CLASSES 9108841633

Page 9

Visit Jnanapeeta for tech YouTube channel
9108841633

JNANAPEETA DCET ACADEMY

LETS DREAM IT.

JNANAPEETA DCET ACADEMY

37. What is the integral of $\ln(x)$ with respect to x ?

- a) $x\ln(x) + C$
- b) $\ln^2(x) + C$
- c) $1/x + C$
- d) $(1/2)x^2 + C$

Answer: a) $x\ln(x) + C$

38. What is the integral of $e^{(2x)}\sin(3x)$ with respect to x ?

- a) $e^{(2x)}\sin(3x) + C$
- b) $e^{(2x)}\cos(3x) + C$
- c) $(1/2)e^{(2x)}\sin(3x) + C$
- d) $(1/2)e^{(2x)}\cos(3x) + C$

Answer: c) $(1/2)e^{(2x)}\sin(3x) + C$

39. What is the integral of $x/(x^2 + 4)$ with respect to x ?

- a) $(1/2)\ln(x^2 + 4) + C$
- b) $\ln(x) + C$
- c) $(1/2)\ln(x) + C$
- d) $(1/2)\ln(x^2 + 2) + C$

Answer: a) $(1/2)\ln(x^2 + 4) + C$

40. What is the integral of $1/(1 - x^2)$ with respect to x ?

- a) $\tan^{-1}(x) + C$
- b) $\cot^{-1}(x) + C$
- c) $\sec^{-1}(x) + C$
- d) $\sinh^{-1}(x) + C$

Answer: a) $\tan^{-1}(x) + C$

CONTACT FOR DCET CLASSES 9108841633

Page 10

Visit Jnanapeeta for tech YouTube channel
9108841633

JNANAPEETA DCET ACADEMY

LETS DREAM IT.

JNANAPEETA DCET ACADEMY

41. What is the integral of $x^2e^{(3x)}$ with respect to x ?

- a) $(1/3)x^2e^{(3x)} + C$
- b) $xe^{(3x)} + C$
- c) $(1/9)x^3e^{(3x)} + C$
- d) $(1/3)e^{(3x)} + C$

Answer: c) $(1/9)x^3e^{(3x)} + C$

42. What is the integral of $\sqrt{1-x^2}$ with respect to x ?

- a) $\sin^{-1}(x) + C$
- b) $\cos^{-1}(x) + C$
- c) $\tan^{-1}(x) + C$
- d) $\cot^{-1}(x) + C$

Answer: b) $\cos^{-1}(x) + C$

43. What is the integral of $x^2\sin(x)$ with respect to x ?

- a) $-x^2\cos(x) + 2x\sin(x) - 2\cos(x) + C$
- b) $x^2\cos(x) + 2x\sin(x) + 2\cos(x) + C$
- c) $-x^2\sin(x) + 2x\cos(x) + 2\sin(x) + C$
- d) $x^2\sin(x) + 2x\cos(x) - 2\sin(x) + C$

Answer: a) $-x^2\cos(x) + 2x\sin(x) - 2\cos(x) + C$

44. What is the integral of $\sec(x)\tan(x)$ with respect to x ?

- a) $\sec(x) + C$
- b) $\sec(x)\tan(x) + C$
- c) $\ln|\sec(x) + \tan(x)| + C$
- d) $\ln|\sec(x) - \tan(x)| + C$

Answer: c) $\ln|\sec(x) + \tan(x)| + C$

CONTACT FOR DCET CLASSES 9108841633

Page 11

Visit Jnanapeeta for tech YouTube channel
9108841633

JNANAPEETA DCET ACADEMY

LETS DREAM IT.

JNANAPEETA DCET ACADEMY

45. What is the integral of $1/(x^3 + 1)$ with respect to x ?

- a) $(1/3)\ln|x^3 + 1| + C$
- b) $(1/3)\ln|x + 1| + C$
- c) $(1/3)\ln|x - 1| + C$
- d) $(1/3)\ln|x^2 - 1| + C$

Answer: a) $(1/3)\ln|x^3 + 1| + C$

46. What is the integral of 2^x with respect to x ?

- a) $(2^x)/(\ln(2)) + C$
- b) $(2^{(x+1)})/(\ln(2)) + C$
- c) $(1/\ln(2))^{(2^x)} + C$
- d) $(1/\ln(2))^{(2^{(x+1)})} + C$

Answer: a) $(2^x)/(\ln(2)) + C$

47. What is the integral of $\sqrt{x^2 + 1}$ with respect to x ?

- a) $(1/2)(x^2 + 1)^{(3/2)} + C$
- b) $(1/2)(x^2 + 1)^{(1/2)} + C$
- c) $(1/3)(x^2 + 1)^{(3/2)} + C$
- d) $(1/3)(x^2 + 1)^{(1/2)} + C$

Answer: b) $(1/2)(x^2 + 1)^{(1/2)} + C$

48. What is the integral of $1/\sqrt{1 - x^2}$ with respect to x ?

- a) $\sin^{-1}(x) + C$
- b) $\cos^{-1}(x) + C$
- c) $\tan^{-1}(x) + C$
- d) $\cot^{-1}(x) + C$

Answer: a) $\sin^{-1}(x) + C$

CONTACT FOR DCET CLASSES 9108841633

Page 12

Visit Jnanapeeta for tech YouTube channel
9108841633

JNANAPEETA DCET ACADEMY

LETS DREAM IT.

JNANAPEETA DCET ACADEMY

49. What is the integral of $(3x + 2)/(x^2 + 2x + 1)$ with respect to x ?

- a) $\ln|x^2 + 2x + 1| + C$
- b) $\ln|x^2 + 2x + 1| + 2\ln|x + 1| + C$
- c) $\ln|x^2 + 2x + 1| + 2\ln|x + 1| + C$
- d) $\ln|x^2 + 2x + 1| + \ln|x + 1| + C$

Answer: b) $\ln|x^2 + 2x + 1| + 2\ln|x + 1| + C$

50. What is the integral of $e^x * \cos(x)$ with respect to x ?

- a) $e^x * \sin(x) + C$
- b) $e^x * \cos(x) + C$
- c) $e^x * (\sin(x) + \cos(x)) + C$
- d) The integral does not exist

Answer: c) $e^x * (\sin(x) + \cos(x)) + C$