

Derivative and Integral Practice Worksheet

Find $\frac{dy}{dx}$.

1. $y = \ln x$

2. $y = -4 \sin x$

3. $y = \ln(-\cos x)$

4. $y = 4^x$

5. $y = \frac{(3x-1)(5x+12)}{4x-8}$ (HINT: Use log. diff.)

6. $y = \tan(\ln x)$

7. $y = \frac{1}{x}$

8. $y = 4^6$

9. $y = e^{x \ln 3}$

10. $y = \tan^2(3x)$

11. $\cos y = e^x$

12. $y = e^{x^5}$

13. $y = x^{e^5}$

14. $y = e^{5x}$

15. $y = e^x(3x-2)$

16. $y = \tan e^x$

17. $y = 1000(1.03^x)$

18. $y = (\sin x)^{3x}$

19. $y = \ln(\tan x)$

20. $y = (2x-5)^{-1}$

21. $y = x^5 \ln 4x$

22. $y = \int_2^x \cos 4t \, dt$

23. $y = \int_3^{x^2} \sec^3 t \, dt$

24. $y = \int_0^{\sin x} \sqrt[3]{t} \, dt$

25. $y = \frac{\ln x}{x}$

Integrate.

26. $\int \frac{5}{x} dx$

27. $\int \frac{1}{3x} dx$

28. $\int \frac{x^3}{5-3x^4} dx$

29. $\int \frac{\sin x}{\cos x} dx$

30. $\int \tan x \, dx$

31. $\int e^{4x} dx$

32. $\int x^3 e^{x^4} dx$

33. $\int \ln(e^{5x}) dx$

34. $\int 5 dx$

35. $\int \cot 3x \, dx$