3.4 Problemas

Derive las funciones dadas en los problemas 1 a 44.

1. $f(x) = 4\sqrt{x^5} + \dfrac{2}{\sqrt{x}}$

2. $f(x) = 9\sqrt[3]{x^4} - \dfrac{3}{\sqrt[3]{x}}$

3. $f(x) = \sqrt{2x + 1}$

4. $f(x) = \dfrac{1}{\sqrt[3]{7 - 6x}}$

5. $f(x) = \dfrac{6 - x^2}{\sqrt{x}}$

6. $f(x) = \dfrac{7 + 2x - 3x^4}{\sqrt[3]{x^2}}$

7. $f(x) = (2x + 3)^{3/2}$

8. $f(x) = (3x + 4)^{4/3}$

9. $f(x) = (3 - 2x^2)^{-3/2}$

10. $f(x) = (4 - 3x^3)^{-2/3}$

11. $f(x) = \sqrt{x^3 + 1}$

12. $f(x) = \dfrac{1}{(x^4 + 3)^2}$

13. $f(x) = \sqrt{2x^2 + 1}$

14. $f(x) = \dfrac{x}{\sqrt{1 + x^4}}$

15. $f(t) = \sqrt{2t^3}$

16. $g(t) = \sqrt{\dfrac{1}{3t^5}}$

17. $f(x) = (2x^2 - x + 7)^{3/2}$

18. $g(z) = (3z^2 - 4)^{97}$

19. $g(x) = \dfrac{1}{(x - 2x^3)^{4/3}}$

20. $f(t) = [t^2 + (1 + t)^4]^5$

21. $f(x) = x\sqrt{1 - x^2}$

22. $g(x) = \sqrt{\dfrac{2x + 1}{x - 1}}$

23. $f(t) = \sqrt{\dfrac{t^2 + 1}{t^2 - 1}}$

24. $h(y) = \left(\dfrac{y + 1}{y - 1}\right)^{17}$

25. $f(x) = \left(x - \dfrac{1}{x}\right)^3$

26. $g(z) = \dfrac{z^2}{\sqrt{1 + z^2}}$

27. $f(v) = \dfrac{\sqrt{v + 1}}{v}$

28. $h(x) = \left(\dfrac{x}{1 + x^2}\right)^{5/3}$

11. $g(t) = e^{\cos t}$

12. $f(x) = xe^{\operatorname{sen} x}$

13. $f(x) = \cos(1 - e^{-x})$

14. $f(x) = \operatorname{sen}^2(e^{-x})$

15. $f(x) = \ln(x + e^{-x})$

16. $f(x) = e^x \cos 2x$

17. $f(x) = e^{-2x} \operatorname{sen} 3x$

18. $g(t) = \ln(te^{t^2})$

19. $g(t) = 3(e^t - \ln t)^5$

20. $g(t) = \operatorname{sen}(e^t) \cos(e^{-t})$

21. $f(x) = \dfrac{2 + 3x}{e^{4x}}$

22. $g(t) = \dfrac{1 + e^t}{1 - e^t}$

23. $g(t) = \dfrac{1 - e^{-t}}{t}$

24. $f(x) = e^{-1/x}$

25. $f(x) = \dfrac{1 - x}{e^x}$

26. $f(x) = e^{\sqrt{x}} + e^{-\sqrt{x}}$

27. $f(x) = e^{(e^x)}$

28. $f(x) = \sqrt{e^{2x} + e^{-2x}}$

29. $f(x) = \operatorname{sen}(2e^x)$

30. $f(x) = \cos(e^x + e^{-x})$

Determine dy/dx en los problemas 21 a 60.

21. $y = \operatorname{sen}^2 \sqrt{x}$

22. $y = \dfrac{\cos 2x}{x}$

23. $y = x^2 \cos(3x^2 - 1)$

24. $y = \operatorname{sen}^3 x^4$

25. $y = \operatorname{sen} 2x \cos 3x$

26. $y = \dfrac{x}{\operatorname{sen} 3x}$

27. $y = \dfrac{\cos 3x}{\operatorname{sen} 5x}$

28. $y = \sqrt{\cos \sqrt{x}}$

29. $y = \operatorname{sen}^2 x^2$

30. $y = \cos^3 x^3$

31. $y = \operatorname{sen} 2\sqrt{x}$

32. $y = \cos 3\sqrt[3]{x}$

33. $y = x \operatorname{sen} x^2$

34. $y = x^2 \cos\left(\dfrac{1}{x}\right)$

35. $y = \sqrt{x} \operatorname{sen} \sqrt{x}$

36. $y = (\operatorname{sen} x - \cos x)^2$

37. $y = \sqrt{x}(x - \cos x)^3$

38. $y = \sqrt{x} \operatorname{sen} \sqrt{x + \sqrt{x}}$

39. $y = \cos(\operatorname{sen} x^2)$

40. $y = \operatorname{sen}(1 + \sqrt{\operatorname{sen} x})$

41. $y = \tan x^7$

42. $y = \sec x^7$

43. $y = (\tan x)^7$

44. $y = (\sec 2x)^7$

45. $y = x^7 \tan 5x$

46. $y = \dfrac{\sec x^5}{x}$

47. $y = \sqrt{x} \sec \sqrt{x}$

48. $y = \sec \sqrt{x} \tan \sqrt{x}$

49. $y = \csc\left(\dfrac{1}{x^2}\right)$

50. $y = \cot\left(\dfrac{1}{\sqrt{x}}\right)$