Chain Rule

Differentiate the following.

1. $f(x) = (x - 8)^{12}$

2. $f(x) = (x - 6)^{10}$

3. $f(x) = \sqrt{3x - 5}$

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

5. $f(x) = (3x - 8)^7$

6. $f(x) = (5x - 11)^9$

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

8. $f(x) = \sqrt[3]{x + 4}$

9. $f(x) = \sin(4x)$

10. $f(x) = \cos(3x)$

11. $f(x) = \tan\left(\frac{1}{2}x\right)$

12. $f(x) = \cot\left(\frac{3}{4}x\right)$

13. $f(x) = \sin[\cos(x)]$

14. $f(x) = \cos[\sin(x)]$

15. $f(x) = \sec(\pi x)$

16. $f(x) = \csc(\pi x)$

17. $f(x) = \csc(x^2)$

18. $f(x) = \sec(x^2)$

19. $f(x) = \tan(\sqrt{x})$

20. $f(x) = \cot(\sqrt{x})$

21. $f(x) = sin(1 - x^3)$

22. $f(x) = cos(1 + x^3)$

23. $f(x) = \sqrt{1 + x - x^4}$

24. $f(x) = \sqrt{1 - x + x^4}$

25. $f(x) = \sqrt[3]{6x - 5}$

26. $f(x) = \sqrt[3]{5x + 2}$

27. $f(x) = sin^2(x)$

28. $f(x) = cos^2(x)$

29. $f(x) = tan^3(x)$

30. $f(x) = cot^3(x)$

31. $f(x) = \sqrt{sec\ (x)}$

32. $f(x) = \sqrt{csc\ (x)}$

33. $f(x) = \sqrt[3]{csc\ (x)}$

34. $f(x) = \sqrt[3]{sec(x)}$

35. $f(x) = (1 + x^4)^{2/3}$

36. $f(x) = (1 + x^4)^{3/4}$

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

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

39. $f(x) = (1 + 6x)^4$

40. $f(x) = (1 + 4x)^4$

41. $f(x) = (1 - cos(x))^6$

42. $f(x) = (1 + \cos(x))^6$

43. $f(x) = (1 - \tan(x))^3$

44. $f(x) = (1 + \cot(x))^3$

45. $f(x) = \sec(x^2 - 3x + 8)$

46. $f(x) = \csc(x^2 - 3x + 8)$

47. $f(x) = \sin(\sqrt{x})$

48. $f(x) = \cos(\sqrt{x})$

49. $f(x) = \cot(12x)$

50. $f(x) = \tan(6x)$