Chain Rule Again

Differentiate the following.

1. $f(x) = (x-5)^3(x+3)^2$
2. $f(x) = (x-5)^4(x+3)^3$
3. $f(x) = (1+2x^3)^4$
4. $f(x) = (1+3x^2)^4$
5. $f(x) = (7-5x^2)^4$
6. $f(x) = (5-7x^2)^3$
7. $f(x) = \frac{sin^2(x)}{\cos(x)}$
8. $f(x) = \frac{cos^2(x)}{\sin(x)}$
9. $f(x) = 2xsin(x^2)$
10. $f(x) = 3xcos(x^2)$
11. $f(x) = x^4sin(2x)$
12. $f(x) = x^4cos(3x)$
13. $f(x) = xsec(\sqrt{x})$
14. $f(x) = xtan(\sqrt{x})$
15. $f(x) = \sqrt{1-sec(4x)}$
16. $f(x) = \sqrt{1+sec(2x)}$
17. $f(x) = \sqrt[3]{1-tan(x^2)}$
18. $f(x) = \sqrt[3]{1+tan(x^2)}$
19. $f(x) = (x^3-4)^2(x^4+5)^{-3}$

20. $f(x) = (x^3 - 4)^3(x^4 + 5)^{-2}$

21. $f(x) = (2x^5 + 3)^{-4}(x^3 - 1)^3$

22. $f(x) = (2x^5 + 3)^{-2}(x^3 - 1)^4$

23. $f(x) = sin(4x)cos(2x)$

24. $f(x) = sin(5x)cos(4x)$

25. $f(x) = sec(x^2)tan(x^3)$

26. $f(x) = csc(x^2)cot(x^3)$

27. $f(x) = \sqrt{\frac{x-1}{x+1}}$

28. $f(x) = \sqrt{\frac{x+1}{x-1}}$

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

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

31. $f\ (x) = \frac{sin(2x)}{sin(2x)+cos(2x)}$

32. $f(x) = \frac{sin(3x)}{sin(3x)-cos(3x)}$

33. $f(x) = xsin\left(\frac{1}{x}\right)$

34. $f(x) = xcos\left(\frac{1}{x}\right)$

35. $f(x) = sin^2(8x)$

36. $f(x) = cos^2(3x)$

37. $f(x) = tan^4(3x)$

38. $f(x) = tan^5(2x)$

39. $f(x) = sec^2(x) + tan^2(x)$

40. $f(x) = csc^2(x) + cot^2(x)$

41. $f(x) = sin^2(x) + \sin(x^2)$

42. $f(x) = cos^3(x) + \cos(x^3)$

43. $f(x) = (1 - sin^2(x))^5$

44. $f(x) = (1 - cos^2(x))^4$

45. $f(x) = x\sqrt{1 + 3x^4}$

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

47. $f(x) = \frac{\sqrt{x-6}}{x+1}$

48. $f(x) = \frac{\sqrt{x+3}}{x-2}$

49. $f(x) = \sqrt{x + \sqrt{x}}$

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