Find the derivative of each function.

1. $f(x) = 2x^2 - 3x$

6. $f(x) = x^2 + 2x - 1$

2. $f(x) = 6x^3 - 2x + 5$

7. $f(x) = x^5 + 3x^3 - 4x^2 + 3$

3. $f(x) = 3x^7 + 4x^5 - 2x^2$

8. $f(x) = \frac{1}{4}x^4 - \frac{1}{3}x^3 + \frac{1}{2}x^2 - x$

4. $f(x) = 3x^{15} - 12x^{10} + 7x^2 - 8$

9. $f(x) = \sqrt{2x} - \sqrt{2}x$

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

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

11. **Find the slope of the tangent line** to $f(x) = 2x^2 + 10x - 7$ at (-2, -19).

12. **Find the slope of the tangent line** to $f(x) = x^3 - x^2 + 3$ at (-1, 1).

Given f(x) below, find f'(x).

13. $f(x)=(2x+7)(3x-8)$

14. $f(x)=(x^2+1)(3x-2)$

15. $f(x)=(x^2+2x)(x^2+7x)$

16. $f(x)=x^2(x^2-3)$

17. $f(x)=(x^3+1)(x^2-2x^{-1}+1)$

18. $f(x)=(2x^3-4x^2)(3x^5+x^2)$

19. $f(x)=x^2(x^3+3x^2)$

20. $f(x)=(x^2+2x)(x^3-1)$

21. $f(x)=(2x^4-1)(5x^3+6x)$

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

23. $f(x)=(x^5+1)(4x^2-2)$

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

Given f(x), find f'(x).

25. $f(x) = \dfrac{x^2}{x-1}$

30. $f(x) = \dfrac{2x+1}{x+5}(3x-1)$

26. $f(x) = \dfrac{x^2 - 3x + 1}{2x - 9}$

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

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

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

28. $f(x) = \dfrac{4-3x-x^2}{x-2}$

33. $f(x) = \dfrac{1}{x+1}$

29. $f(x) = \dfrac{x^3 - 8}{x^3 + 8}$

Find $f'(x)$ for each of the following.

34. $f(x) = (x^2 + 5x)^2$

35. $f(x) = (x^2 - 2x + 1)^3$

36. $f(x) = x^2 (x^3 + 3x^2)^{-1}$

37. $f(x) = x^2 (x^4 + 2x)^2$

38. $f(x) = \sqrt{2x^2 + 7x - 8}$

39. $f(x) = (x^2 + 3x)(x^2 + 2x)^2$

40. $f(x) = \sqrt[3]{x^2 + 1}$

41. $f(x) = (x^3 - 2x + 1)^4$

42. $f(x) = (x^2 - 4)^{-\frac{1}{2}}$

43. $f(x) = \left(\dfrac{x+1}{x-1}\right)^2$

44. $f(x) = x^2 (x+1)^{-1}$

45. $f(x) = x^4 (x-5)^6$

46. $f(x) = \dfrac{(x-1)^2}{(x+1)^2}$

47. $f(x) = (x + x^{-1})^2$

Find $f'(x)$ **for each of the following.**

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

49. $f(x) = x\sqrt{1 - x^3}$

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

51. $f(x) = (7 - 3x^3)^2$

52. $f(x) = (x^2 + 5x)^2$

53. $f(x) = (x^2 - 2x + 1)^3$

54. $f(x) = x^2(x^4 + 2x)^2$

55. $f(x) = \sqrt{2x^2 + 7x - 8}$

56. $f(x) = \dfrac{(3x-5)^2}{\sqrt{2x-3}}$

57. $f(x) = (2x-1)^{\frac{5}{2}}(7x-3)^{\frac{3}{7}}$

58. $f(x) = \dfrac{1}{\sqrt[3]{(x^3 + 3x + 2)^2}}$

59. $f(x) = \dfrac{\sqrt{x^2 - 1}}{\sqrt[3]{x^2 + 1}}$

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

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