

1. $f'(x) = 3x^2 + 6x$, $f''(x) = 6x + 6$
2. $f'(x) = 6x - 3x^2$, $f''(x) = 6 - 6x$
3. $f'(x) = 4x^3 - 4$, $f''(x) = 12x^2$
4. $f'(x) = 4x^3 - 16x^2$, $f''(x) = 12x^2 - 32x$
5. $f'(x) = 4(x - 4)^2(x - 1)$,
 $f''(x) = 12(x^2 - 6x + 8)$
6. $f'(x) = 5(x^4 - 1)$, $f''(x) = 20x^3$
7. $f'(x) = (x + 2)^2(x - 2)^2$
 $f''(x) = 4x(x + 2)(x - 2)$
8. $f'(x) = -10x(4 - x^2)^4$,
 $f''(x) = -10(4 - x^2)^3(4 - 9x^2)$
9. $f'(x) = \frac{-1}{(x - 1)^2}$, $f''(x) = \frac{2}{(x - 1)^3}$
10. $f'(x) = \frac{5}{(5 - x)^2}$, $f''(x) = \frac{10}{(5 - x)^3}$
11. $f'(x) = \frac{2}{(2 - x)^2}$, $f''(x) = \frac{4}{(2 - x)^3}$
12. $f'(x) = -\frac{(x + 2)}{x^3}$, $f''(x) = \frac{2(x + 3)}{x^4}$
13. $f'(x) = -\frac{x^2 + 4}{(x^2 - 4)^2}$, $f''(x) = \frac{2x(x^2 + 12)}{(x^2 - 4)^3}$
14. $f'(x) = -\frac{2x}{(x^2 - 4)^2}$, $f''(x) = \frac{2(3x^2 + 4)}{(x^2 - 4)^3}$
15. $f'(x) = \frac{6x}{(x^2 + 3)^2}$, $f''(x) = -\frac{18(x^2 - 1)}{(x^2 + 3)^3}$
16. $f'(x) = \frac{2(x^2 - 1)}{(x^2 + 1)^2}$, $f''(x) = \frac{-4x(x^2 - 3)}{(x^2 + 1)^3}$
17. $f'(x) = -\frac{(x - 2)}{x^3}$, $f''(x) = \frac{2(x - 3)}{x^4}$
18. $f'(x) = \frac{-2x^3 - 1}{(x^3 - 1)^2}$, $f''(x) = \frac{6x^2(x^3 + 2)}{(x^3 - 1)^3}$
19. $f'(x) = \frac{3x^2}{(x^3 + 1)^2}$, $f''(x) = \frac{6x(1 - 2x^3)}{(x^3 + 1)^3}$
20. $f'(x) = \frac{2x^2(x - 3)}{(x - 2)^2}$,
 $f''(x) = \frac{2x(x^2 - 6x + 12)}{(x - 2)^3}$
21. $f'(x) = \frac{3(x - 1)}{2\sqrt{x}}$, $f''(x) = \frac{3(x + 1)}{4x^{3/2}}$
22. $f'(x) = \frac{4(x - 1)}{3x^{2/3}}$, $f''(x) = \frac{4(x + 2)}{9x^{5/3}}$
25. $f'(x) = \frac{1}{(x^2 + 1)^{3/2}}$,
 $f''(x) = -\frac{3x}{(x^2 + 1)^{5/2}}$
29. $f'(x) = \frac{x^{2/3} - 1}{x^{2/3}}$, $f''(x) = \frac{2}{3x^{5/3}}$
30. $f'(x) = \frac{5(x - 2)}{3\sqrt[3]{x}}$, $f''(x) = \frac{10(x + 1)}{9x^{4/3}}$
31. $f'(x) = \frac{2x}{3\sqrt[3]{(x^2 - 1)^2}}$,
 $f''(x) = -\frac{2(x^2 + 3)}{9(x^2 - 1)^{5/3}}$
32. $f'(x) = \frac{x^2}{(x^3 + 1)^{2/3}}$, $f''(x) = \frac{2x}{(x^3 + 1)^{5/3}}$