

Product and Quotient Rules Worksheet

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Differentiate each function.

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

9. $f(x) = (x^3 + 2x)(e^x + 1)$

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

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

3. $f(x) = x^3e^x$

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

4. $f(x) = (x^2 + 1)e^x$

12. $f(x) = (x^3 - 1)e^x$

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

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

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

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

7. $f(x) = xe^x$

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

8. $f(x) = (x^2 - 4)e^x$

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

$$17. f(x) = \frac{x^3 - 4x}{x^2 + 1}$$

$$24. f(x) = \frac{x^4 - 2x^2 + 3}{x^2 + x}$$

$$18. f(x) = \frac{e^x}{x}$$

$$25. f(x) = \frac{3x^2 - 1}{e^x}$$

$$19. f(x) = \frac{x^2 - 3}{e^x}$$

$$26. f(x) = \frac{x^2 e^x}{x + 1}$$

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

$$27. f(x) = \frac{(x^2 + 1)(x^3 - 2)}{x - 1}$$

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

$$28. f(x) = \frac{x(x^2 + 3)}{e^x}$$

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

$$29. f(x) = \frac{(x^3 - 1)e^x}{x^2 + 1}$$

$$23. f(x) = \frac{e^x + 1}{x^2 + 1}$$

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