Name _____

Assignment #12D: *Product and Quotient Rules*
Find the derivative of each by (1) distributing first and by (2) using the product rule. Verify that your answers are equivalent.

1. $y = (x-3)(x+5)$

2. $y = x(x+5)$

3. Find the slope of the line tangent to
$f(x) = \dfrac{1}{x^2 + 1}$ at $x = -1$.
(A) -2
(B) $\dfrac{1}{2}$
(C) 1
(D) 2
(E) undefined

4. *Tangent Lines* Find equations of the tangent lines to the graph of $f(x) = \dfrac{x + 1}{x - 1}$ that are parallel to the line $2y + x = 6$.
Then graph the function and the tangent lines.

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- p.124 (15-22)

In Exercises 15–22, find dy/dx. Support your answer graphically.

15. $(x^3 + x + 1)(x^4 + x^2 + 1)$

16. $(x^2 + 1)(x^3 + 1)$

17. $y = \dfrac{2x + 5}{3x - 2}$

18. $y = \dfrac{x^2 + 5x - 1}{x^2}$

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

20. $y = (1 - x)(1 + x^2)^{-1}$

21. $y = \dfrac{x^2}{1 - x^3}$

22. $y = \dfrac{(x + 1)(x + 2)}{(x - 1)(x - 2)}$