PRODUCT RULE WORKSHEET

Use the product rule to find the derivative of each of the following functions.

1.
$$f(x) = (x^3 + 2x + 1)(2x^2 + 3x - 5)$$
 2. $f(x) = x^2 \cos x$

$$2. \quad f(x) = x^2 \cos x$$

3.
$$f(x) = x \sin x + 1$$
 4. $f(x) = 3x^4 \cos x$

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5.
$$f(x) = (\sqrt{x} + 1)(\sin x - 3x)$$
 6. $f(x) = (\sin x)\sqrt[3]{x^2}$

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7.
$$f(x) = 3x \cos x + \sin x \cos x$$
 8. $f(x) = \frac{\sin x}{x^3}$

$$8. \quad f(x) = \frac{\sin x}{x^3}$$

9.
$$f(x) = x^3(2\sin x + x^2 - 1)$$
 10. $f(x) = 3x\sin x \cos x$

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11.
$$f(x) = 3\cos x$$
 12. $f(x) = 5\sin x$

$$12. \quad f(x) = 5\sin x$$

13.
$$f(x) = (x^3 + 2x)\sqrt{x}$$

13.
$$f(x) = (x^3 + 2x)\sqrt{x}$$
 14. $f(x) = (x^3 + 2x + 1)\cos x$

15.
$$f(x) = x \sin x - x \cos x$$
 16. $f(x) = \sqrt[3]{x} \sin x$

$$16. \quad f(x) = \sqrt[3]{x} \sin x$$