

2.8 The Product Rule

Calculus

Name: _____

CA #2

Find the derivative of each function.

1. $f(x) = 9x \cos x$

2. $g(x) = \frac{1}{x}(6x - \ln x)$

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

4. $g(x) = 3 \ln x \sin x$

5. $h(x) = 4e^x(x^2 + 2)$

Use the table to find the value of the derivatives of each function.

6.

x	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$
-3	-6	2	3	-1

a. $h(x) = -f(x)g(x)$
Find $h'(-3)$.

b. $d(x) = \left(1 - \frac{f(x)}{2}\right)(3g(x) + 2)$
Find $d'(-3)$.

Use the table to find the value of the derivatives of each function.

7.

t	$h(t)$	$h'(t)$	$f(t)$	$f'(t)$
1	4	2	-3	6

a. $a(t) = 4h(t)f(t)$
Find $a'(1)$.

b. $b(t) = (3h(t) - 2)(f(t) - 1)$
Find $b'(1)$.

5. $4e^x(x^2 + 2x + 2)$	6a. -12	6b. -23	7a. 72	7b. 36
1. $9 \cos x - 9x \sin x$	2. $\frac{\ln x - 1}{x^2}$	3. $-2e^x(1 + 3x)$	Lots of answers. Try to manipulate it to look like this.	
4. $\frac{3 \sin x}{x} + 3 \ln x \cos x$				

Answers to 2.8 CA #2