Derivatives — Combined functions

Name: _____ Date: _____

Find f'(x). Decide whether f is a product, a quotient or a chain, then take u and v.

1 $f(x) = -5e^x \cos x$

$u = -5e^x$, $v = \cos x$
$u' = -5e^x$, $v' = -\sin x$
$f'(x) = -5e^x \cos x + 5e^x \sin x$
$= -5e^x(\cos x - \sin x)$

2 $f(x) = 4e^x \sin x$

3 $f(x) = \dfrac{2\cos x}{x}$

4 $f(x) = \dfrac{4e^x}{x}$

Derivatives · Combined functions — Answer key

1. $f(x) = -5e^x \cos x \rightarrow f'(x) = -5e^x(\cos x - \sin x)$

2. $f(x) = 4e^x \sin x \rightarrow f'(x) = 4e^x(\sin x + \cos x)$

3. $f(x) = \frac{2\cos x}{x} \rightarrow f'(x) = \frac{-2(x \sin x + \cos x)}{x^2}$

4. $f(x) = \frac{4e^x}{x} \rightarrow f'(x) = \frac{4e^x(x-1)}{x^2}$