

Directions: Begin at any cell and write it #1. Take the derivative. Search for your answer.

When you find it, mark it #2. Continue in this manner until you complete the circuit. Additional paper may be necessary! No technology is needed!

Answer: $2x \cos x + 2 \sin x$

_____: $(x^3 + x + 1)(x^4 + x^2 + 1)$

Answer: 24

$$\# \text{_____} : \frac{\sin x}{\cos x}$$

Answer: -7

$$\# \text{_____} : \frac{4\sqrt{x}}{x^2 - 2}$$

Answer: $\frac{-5x + 2}{x^3}$

_____: $\frac{d}{dx} (g(x) \cdot h(x))$ if $x = 5$ given

x	$g(x)$	$g'(x)$	$h(x)$	$h'(x)$
5	-3	6	3	-2

Answer: $\frac{5}{8}$

#_____ : Let $f(-1) = 3$ and $f'(-1) = 5$.
Let $g(x) = 2x^3$. If $h(x) = \frac{f(x)}{g(x)}$, find $h'(-1)$.

Answer:
$$\frac{-6x^{3/2} - 4x^{-1/2}}{x^4 - 4x^2 + 4}$$

_____: Let $f(-1) = 3$ and $f'(-1) = 5$.
Let $g(x) = \frac{1}{x}$. If $h(x) = f(x) \cdot g(x)$, find $h'(-1)$.

Answer: $7x^6 + 10x^4 + 4x^3 + 6x^2 + 2x + 1$

$$\# \text{_____} : \frac{x^2 + 5x - 1}{x^2}$$

Answer: -8

_____: Let $f(-1) = 3$ and $f'(-1) = 5$.
Let $g(x) = \frac{1}{x}$. If $h(x) = \frac{f(x)}{g(x)}$, find $h'(-1)$.

Answer: -2

_____ : $2x \sin x$

Answer: $\frac{1}{\cos^2 x}$ or $\sec^2 x$

_____: $\frac{d}{dx} \left(\frac{f(x)}{g(x)} \right)$ if $x = -1$ given

x	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$
-1	3	1	4	-2