

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

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

**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

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