March 7

Do you want to live to be 100?
Why or Why not?

March 7

Students will verbally explain how to find the derivative using the power, product and quotient rules
(using the words:
exponent, function, value...)

x	0	1	2	3
f(x)	2	4	6	8
f'(x)	-1	5	7	4
g(x)	-1	-3	6	9
g'(x)	3	-2	5	10

find the derivative of $g(x)\cdot f(x)$ at $x = 0$

$$\frac{d}{dx}(g(x)\cdot f(x)) = g'(x)f(x) + f'(x)g(x)$$

$$= g'(0)f(0) + f'(0)g(0) = 3(2) + -1(-1)$$

$$= 6 + 1 = 7$$

x	0	1	2	3
f(x)	2	4	6	8
f'(x)	-1	5	7	4
g(x)	-1	-3	6	9
g'(x)	3	-2	5	10

find the derivative of $x^3\cdot f(x)$ at $x = 3$

$$\frac{d}{dx}(x^3\cdot f(x)) = 3x^2\cdot f(x) + f'(x)x^3$$

$$= 3(3)^2\cdot f(3) + f'(3)3^3$$

$$= 27(8) + 4(27) = 216 + 108$$

$$= 324$$

x	0	1	2	3
f(x)	2	4	6	8
f'(x)	-1	5	7	4
g(x)	-1	-3	6	9
g'(x)	3	-2	5	10

find the derivative of $\frac{g(x)}{f(x)}$ at x = 2

$$\frac{d}{dx}\left(\frac{g(x)}{f(x)}\right) = \frac{g'(x)f(x) - f'(x)g(x)}{f(x)^2}$$

$$= \frac{g'(2)f(2) - f'(2)g(2)}{f(2)^2} = \frac{5(6) - 7(6)}{6^2}$$

$$= \frac{30 - 42}{36} = \frac{-12}{36} = \frac{-1}{3}$$