

WORKSHEET: PRODUCT AND QUOTIENT RULES

Names and student IDs: _____

Recall the product rule: if f and g are differentiable for all x in a suitable open interval, then

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

Also recall that, using **radians**,

$$\sin'(x) = \cos(x) \quad \text{and} \quad \cos'(x) = -\sin(x)$$

for all real x .

Use the product rule to differentiate the following functions.

1. $q(x) = 3x^7 \cos(x)$.

2. $P(t) = (27t^{10} + 3t - 8)(11t^6 - 101t^4)$. (Don't multiply anything out.)