

## 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.)