	Day 1	Day 2
Author 1	☐	☐
Author 2	☐	☐
Author 3	☐	☐
Author 4	☐	☐

Group Work 11

1. Find $\dfrac{dy}{dx}$

(a) $y = \arcsin(x) \cdot \ln(x)$

(b) $y = \ln\left(\dfrac{\arctan(x)}{\log_3(x)}\right)$

(c) $e^{2x}y = \ln(y^3)$

2. Consider the function $f(x) = x^{\sin x}$.

(a) Explain why $f'(x) \neq (\sin x)x^{(\sin x)-1}$

(b) Find $f'(x)$ by using **logarithmic differentiation**.

i. "Take ln" of both sides of $y = x^{\sin x}$ and use rules of logs to simplify.

ii. Use implicit differentiation on your answer to the previous part to find $\frac{dy}{dx}$.

iii. Take your answer to the previous part and plug in $y = x^{\sin x}$ to get your final answer for $\frac{dy}{dx}$.