

Each problem is worth 5 points. Clear and complete justification is required for full credit.

1. Find the derivative of $y = (1 + x^5)^{2/3}$.

$$F'(x) = f'(g(x)) (g'(x))$$

$$y' = \frac{2}{3} (1 + x^5)^{-\frac{1}{3}} (1 + x^5)'$$

$$y' = \frac{2}{3} (1 + x^5)^{-\frac{1}{3}} (5x^4)$$

Great!

2. Find the derivative of $y = 2^{\sin \pi x}$.

$$y' = (2^{\sin \pi x})'$$

$$y' = 2^{\sin \pi x} \cdot \ln 2 \cdot (\sin \pi x)'$$

$$y' = 2^{\sin \pi x} \cdot \ln 2 \cdot (\cos \pi x) \cdot (\pi x)'$$

$$y' = 2^{\sin \pi x} \cdot \ln 2 \cdot \cos \pi x \cdot \pi$$

$$(a^x)' = a^x \ln a$$

Wonderful!