

# Math 2215 - Calculus 1

Quiz #12 - 2017.09.22

Solutions

---

Compute the following derivative:

$$\begin{aligned}\frac{d}{dx} [5 \sin^3(x^2 + \cos^5(7x + 1))] &= 15 \sin^2(x^2 + \cos^5(7x + 1)) \cdot \frac{d}{dx} \sin(x^2 + \cos^5(7x + 1)) \\ &= 15 \sin^2(x^2 + \cos^5(7x + 1)) \cdot \cos(x^2 + \cos^5(7x + 1)) \frac{d}{dx} [x^2 + \cos^5(7x + 1)] \\ &= 15 \sin^2(x^2 + \cos^5(7x + 1)) \cdot \cos(x^2 + \cos^5(7x + 1)) \\ &\quad \times \left[ 2x + 5 \cos^4(7x + 1) \frac{d}{dx} \cos(7x + 1) \right] \\ &= 15 \sin^2(x^2 + \cos^5(7x + 1)) \cdot \cos(x^2 + \cos^5(7x + 1)) \\ &\quad \times [2x + 5 \cos^4(7x + 1) \cdot (-\sin(7x + 1)) \cdot 7]\end{aligned}$$