

# Math 2215 - Calculus 1

Quiz #6 - 2005.09.21

Solutions

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1. Compute  $\frac{d}{dx} \left( x\sqrt{\cos(x) + x^2 + 2} \right)$ .

Here the product rule is used first, then the chain rule:

$$\frac{d}{dx} \left( x\sqrt{\cos(x) + x^2 + 2} \right) = 1 \cdot \sqrt{\cos(x) + x^2 + 2} + x \cdot \frac{1}{2\sqrt{\cos(x) + x^2 + 2}} \cdot (-\sin(x) + 2x)$$

2. Compute  $\frac{d}{dx} \left( \cos\left(\frac{1}{x}\right) \sin(x) \right)$ .

Once again, the product rule first, chain rule second:

$$\frac{d}{dx} \left( \cos\left(\frac{1}{x}\right) \sin(x) \right) = -\sin\left(\frac{1}{x}\right) \cdot \left(-\frac{1}{x^2}\right) \cdot \sin(x) + \cos\left(\frac{1}{x}\right) \cos(x)$$