**quiz 13**
math1117.02
u new haven
*m 28 oct*

name: Solution

**1.** Compute the derivatives for the following functions *(2 points each)*

(a) $y = \cos(5t)$

(b) $y = \sin(\cos(z))$

(c) $g(x) = \dfrac{x}{e^{3x}}$

(d) $(y = \cos(4x^3))^{\frac{7}{4}}$

a) $y' = -5\sin(5t)$

b) $y' = \cos(\cos(z))\dfrac{d}{dz}(\cos(z))$

$= -\cos(\cos(z))\sin(z)$

c) $g'(x) = \dfrac{\frac{d}{dx}(x)e^{3x} - x\frac{d}{dx}(e^{3x})}{(e^{3x})^2} = \dfrac{e^{3x} - 3xe^{3x}}{e^{6x}}$

d) $y' = \dfrac{7}{4}(\cos(4x^3))^{3/4}\dfrac{d}{dx}(\cos(4x^3))$

$= \dfrac{7}{4}(\cos(4x^3))^{3/4}(-\sin(4x^3)\dfrac{d}{dx}(4x^3))$

$= -\dfrac{7}{4}(\cos(4x^3))^{3/4}\sin(4x^3)\cdot 12x^2$

$= -21x^2\sin(4x^3)(\cos(4x^3))^{3/4}$