(1) [5] Find $\frac{dy}{dx}$ by implicit differentiation:

$$4\cos(x)\sin(y) = 1$$

$$\frac{d}{dx}\left[4\cos(x)\sin(y)\right] = \frac{d}{dx}[1]$$

$$4\left[-\sin(x)\sin(y) + \cos(x)\cos(y)\,y'\right] = 0$$

$$\cos(x)\cos(y)\,y' = \sin(x)\sin(y)$$

$$\therefore\ y' = \frac{\sin(x)\sin(y)}{\cos(x)\cos(y)}$$

$$\text{or}\quad y' = \tan(x)\tan(y)$$

(2) [5] Find the limit:

$$\lim_{x\to\infty} \frac{e^{3x} - e^{-3x}}{e^{3x} + e^{-3x}}$$

$$= \lim_{x\to\infty} \frac{e^{3x}(1 - e^{-6x})}{e^{3x}(1 + e^{-6x})}$$

$$= \boxed{1}$$

(3) [5] Differentiate:

$$f(x) = \sin(x)\ln(5x)$$

$$f'(x) = \cos(x)\ln(5x) + \sin(x)\frac{1}{5x}\cdot 5$$

$$= \boxed{\cos(x)\ln(5x) + \frac{\sin(x)}{x}}.$$