$\frac{d}{dx}$ Trig Practice

1. For each f defined below, find $f'(x)$.

   $f(x) = \sin(x^3 - 5)$ $\qquad$ $f(x) = 5^{3x^2 - x}$

   $\sin^5(x)\sqrt{x^3 - 5}$ $\qquad$ $\sin^2(x^3)$

2. Find $\lim_{x \to 0} \dfrac{\sin(3x)\sin(5x)}{x^2}$ (if they exists)

3. Find an equation of the line tangent to $y = 3x + 6\cos(x)$ at the point $(\frac{\pi}{3}, \pi + 3)$.