Assignment #6 ***Math 180*** ***Name:***

1. Differentiate the following functions. (No need to simplify)

a) $f(x) = \cos^4\left(\sqrt{3x^2 - 5x + 7}\right)$

b) $f(x) = e^{\sqrt{x^3+2x+5}} \cos^3\left(\sin(x)\right)$

c) $f(x) = \sqrt{2x + \sqrt{3x + \sqrt{4x+1}}}$

d) $f(x)=\cos^3\left(\dfrac{\sqrt{3x^2-5}}{x^3+1}\right)$

e) $f(x)=e^{\frac{4x+3}{x^2+1}}\sqrt[3]{4x^2+5x-3}$

f) $f(x)=\tan^3\left(e^{2x^2-1}\sin(3x)\right)$

2. Find all point(s) on the curve of $f(x) = \sin(2x) - 2\sin(x)$ at which the tangent line is horizontal.

3. Find an equation of the line tangent to the following curve at $x = \pi$

a) $y = \tan^3(x)$

b) $y = 3(1 - \sin(2x))$