Math 182 Honors Quiz 1 Version A

1. Find the following derivatives:

(i) $\dfrac{d}{dx} \sin(3x + 5)$

(ii) $\dfrac{d}{dx} \left(\dfrac{x}{x^2 + 1} \right)$

(iii) $\dfrac{d}{dx} \arctan(4x + 7)$

(iv) $\dfrac{d}{dx} \left(x^2 \cos x \right)$

2. Find the following definite and indefinite integrals:

(i) $\int (x + \sqrt{x})x\,dx$

(ii) $\int_0^2 \left(\frac{1}{3}x^3 - 5\right)dx$

(iii) $\int x\sqrt{x + 1}\,dx$

(iv) $\int_0^{\pi/12} \sin^2 x\,dx$