Math 181 Quiz 10 Version A

1. Find the following derivatives and integrals:

(i) $\dfrac{d}{dx} \arctan |x|$

(ii) $\dfrac{d}{dx} \ln(x^7 \cos x)$

(iii) $\displaystyle\int_0^1 \frac{1}{1+x^2}\, dx$

(iv) $\displaystyle\int_0^1 3x \cos x^2\, dx$

Math 181 Quiz 10 Version A

2. State the Fundamental Theorem of Calculus

(i) Part I.

(ii) Part II.

3. Let f be continuous and ϕ be a differentiable function. Use the Fundamental Theorem of Calculus and the chain rule to prove that

$$\int_a^b f(\phi(x))\phi'(x)\,dx = \int_{\phi(a)}^{\phi(b)} f(x)\,dx.$$