Name and surname:

U number:

Calculus I - MAC 2311 - Section 007

Quiz 5 — Take-home quiz

Expires on Thursday October 26 at 11 am

1) [3 points] Without using a calculator compute the following values.

a) $\sin^{-1}\left(-\frac{\sqrt{2}}{2}\right) =$

b) $\cos^{-1}\left(\frac{1}{2}\right) =$

c) $\tan^{-1}\left(\sqrt{3}\right) =$

d) $\sin\left(\cos^{-1}\left(\frac{\sqrt{3}}{2}\right)\right) =$

e) $\tan^{-1}\left(\sin\left(-\frac{\pi}{2}\right)\right) =$

f) $\cos^{-1}\left(\sqrt{3}\sin\left(\frac{\pi}{6}\right)\right) =$

2) [1+2.5+1.5 points] Consider the function

$$f(x) = \tan(\sin^{-1}(2x)).$$

a) Find the domain of f.

b) Show that for each x in the domain a simplified expression for f is $\frac{2x}{\sqrt{1-4x^2}}$.

c) Compute $f'(x)$.

3) [1.5+1.5 points] Compute the following limits and show all your work:

a) $\lim_{x \to 0} \dfrac{x^2}{1 - \cos(x)}$

b) $\lim_{x \to \infty} xe^{-x}$