INVERSE TRIG FUNCTIONS

1. Evaluate the following:

a) $\sin^{-1}\left(-\dfrac{\sqrt{3}}{2}\right)$

b) $\cos^{-1}\left(-\dfrac{\sqrt{3}}{2}\right)$

c) $\tan^{-1}(1)$

d) $\sin^{-1}\left(\sin\left(-\dfrac{\pi}{6}\right)\right)$

e) $\sin^{-1}\left(\sin\left(\dfrac{2\pi}{3}\right)\right)$

f) $\tan^{-1}(\tan(\pi))$

Date: October 11, 2021.

2. Use implicit differentiation and the triangle trick from last class to find $\dfrac{d}{dx}\left[\cos^{-1}x\right]$.

3. Find the following derivatives.

a) $\dfrac{d}{dx}\left[\cos^{-1}\left(\dfrac{1}{x}\right)\right]$

b) $\dfrac{d}{dx}\left[\tan^{-1}\left(x^2\right)\right]$

c) $\dfrac{d}{dx}\left[x\sin^{-1}\left(5x\right)\right]$

d) $\dfrac{d}{dx}\left[\tan\left(\cos^{-1}\left(\dfrac{x}{5}\right)\right)\right]$

Challenge. Use implicit differentiation and the triangle trick from last class to find $\dfrac{d}{dx}\left[\sec^{-1}x\right]$.