Name: _____ Mark: _____

Mini-math Div 3/4: Monday, January 11, 2020 (10 minutes)

1. Evaluate each of the following limits. You may use any of the three (generalized) Fundamental Trigonometric Limits without proof.

   (a) (2 points) $\lim_{x \to 0} \dfrac{\sin 4x}{\sin 3x}$

   (b) (2 points) $\lim_{x \to 0} \dfrac{\cos 2x}{x + 2\cos x}$

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

2. (a) (1 point) Find the derivative of $\sin x$ from first principles using the Newton quotient (you may use any of the three (generalized) Fundamental Trigonometric Limits without proof).

(b) (1 point) Find the derivative of $\tan x$ using derivative rules (you may use the derivatives of $\sin x$ and $\cos x$ without proof).