

Name: \_\_\_\_\_

Mark: \_\_\_\_\_

**Mini-math Div 3/4: Monday, December 14, 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)  $\lim_{x \rightarrow 0} \frac{\sin 4x}{\sin 3x}$

(b) (2 points)  $\lim_{x \rightarrow 0} \frac{\cos 2x}{x + 2 \cos x}$

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

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).