

KFUPM SEM I (Term 051) Name: _____ Serial #: _____

MATH 101-19 Quiz # 5 ID: #: _____

1. Let $f(x) = \cot(\sin^{-1} 3x)$.

(a) (2-points) Find the domain of $f(x)$.

(b) (2-points) Find the exact value of $\left(\frac{\sqrt{3}}{6}\right)$.

(c) (4-points) Find $f'(x)$. [Write your answer in simplest form (i.e. No trigonometric or inverse trigonometric function should appear in the answer)]

2. (3-points) Evaluate $\lim_{x \rightarrow 0} \frac{e^x - 1 - x - \left(\frac{x^2}{2}\right)}{2x^3}$.

3. (4-points) Evaluate $\lim_{x \rightarrow \infty} 5x \ln \left(1 + \frac{4}{x}\right)$.

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

(a) (2-points) Find the domain of $f(x)$.

(b) (2-points) Find the exact value of $\left(\frac{\sqrt{3}}{4}\right)$.

(c) (4-points) Find $f'(x)$. [Write your answer in simplest form (i.e. No trigonometric or inverse trigonometric function should appear in the answer)]

2. (3-points) Evaluate $\lim_{x \rightarrow 0} \frac{\frac{x^2}{2} + x + 1 - e^x}{3x^3}$.

3. (4-points) Evaluate $\lim_{x \rightarrow \infty} 7x \ln \left(1 + \frac{5}{x} \right)$.