KFUPM SEM II (Term 102) Name: _____ Serial #: _____

MATH 101-2-4 Quiz # 5 ID: #: _____ Sec. #: _____

Calculators Are NOT ALLOWED

1. (6-points) Use the first derivative to discuss the following function for increasing, decreasing, local maxima and local minima: $f(x) = \frac{1}{5}\,x^5 - 3x^3 + 11.$

2. (6-points) Find the intervals on which the graph of the following function is concave upward, concave downward, and find the x-coordinates of all inflection points:

$$f(x) = \frac{1}{30}\,x^6 - \frac{3}{4}\,x^4 + 7x + 8.$$

3. Find each of the following limits:

(a) (5-points) $\lim_{x\to 0^+} (1+\sin 3x)^{2/x}$.

(b) (3-points) $\lim_{x\to 1} \dfrac{5x^3-3x^2+x-3}{4x+5\ln x-4}$.

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