

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

Student ID: \_\_\_\_\_

**No Work = No Credit. Write Legibly. Box your final result.**1. 5 points

$$f(x) = x^4 - 2x^2 + 3$$

(a) 2 points Find the intervals on which  $f$  is increasing or decreasing.(b) 1 point Find the local maximum and minimum values of  $f$ .(c) 2 points Find the intervals of concavity and the inflection points.

2. 5 points Find the limit. Use l'Hospital's Rule where appropriate. If there is a more elementary method, consider using it. If l'Hospital's Rule doesn't apply, explain why.

$$\lim_{x \rightarrow 0^+} x^{x^2}$$