

Name: _____

Score: _____

1. Find the absolute maximum and absolute minimum values for the functions in the given interval. (3 points each)

(a) $f(x) = x^3 - 3x^2 + 2$, $[-1, 2]$

(b) $f(x) = x^2e^x$, $[-2, 1]$

2. (a) State the Mean Value Theorem. (1 point)
- (b) Show that $x > \sin x$ for $0 < x < 2\pi$. (Hint: Apply Mean Value Theorem on $f(x) = x - \sin x$) (2 points)
- (c) Show that $1 - \frac{x^2}{2} < \cos x$ for $0 < x < 2\pi$. (1 point)