

## Brief solutions to Quiz 6

Nov 21, 2023:

1. (25 pts) Find all local extremes and points of inflection of  $f(x) = x^4 - 4x^3 + 10$ . For your reference,  $f'(x) = 4x^2(x - 3)$ ,  $f''(x) = 12x(x - 2)$ .

**Ans:**

See page 262 of the textbook, or page 1-3 of Lecture 14.

2. (25 pts) Evaluate  $\lim_{x \rightarrow 0} \frac{1}{x} - \frac{1}{\sin x}$ .

**Ans:**

See page 273 of the textbook, or page 11 of Lecture 15.

3. (25 pts) Evaluate  $\lim_{x \rightarrow \infty} (1 + 2x)^{\frac{1}{x}}$ .

**Ans:**

See a similar problem on page 273 of the textbook, or page 11 of Lecture 15.

4. (25 pts) Evaluate  $\lim_{x \rightarrow 0^+} \frac{e^{-\frac{1}{x^2}}}{x}$ .

**Ans:**

See a similar on page 7-8 of Lecture 15.