

Calculus I, Gradescope Assignment, Week 3

Q1. Calculate

$$\lim_{x \rightarrow 1} \frac{x^2 + x - 2}{x^2 - x}.$$

2 marks

Q2. Calculate

$$\lim_{x \rightarrow 9} \frac{\sqrt{x} - 3}{x - 9}.$$

3 marks

Q3. Calculate

$$\lim_{x \rightarrow 0} \frac{1 - \cos 2x}{x}.$$

2 marks

Q4. Calculate $\lim_{x \rightarrow \pi/2} \{(x - \pi/2) \tan x\}$.

3 marks

Q5. Calculate

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

3 marks

Q6. Calculate $\lim_{x \rightarrow \infty} x \sin \frac{1}{x}$.

2 marks

Q7. Use the squeezing theorem to calculate $\lim_{x \rightarrow 0} \tan^2\left(\frac{x}{2}\right) \cos^2\left(\frac{2}{x}\right)$.

5 marks