**Name:** _____
**Student ID:** _____

# Quiz 5

This quiz is graded out of 10 marks. No books, calculators, notes or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

**Question 1.** §2.4 #75 *(2 marks)* Find the indicated limits, if they exist.

$$\lim_{x\to-\infty} \frac{3x^3+x^2+1}{x^3+1}$$

**Question 2.** §2.5 #54 *(3 marks)* Find the values of $x$ for which each function is continuous.

$$f(x) = \begin{cases} -2x+1 & \text{if } x < 0 \\ x^2+1 & \text{if } x \geq 0 \end{cases}$$

**Question 3.** §2.6 #26 Let

$$f(x) = \frac{1}{x-1}$$

a. *(3 marks)* Find the derivative $f'$ of $f$.

b. *(2 marks)* Find an equation of the tangent line to the curve at the point $(-1,-\frac{1}{2})$.