MATH116: QUIZ I

Name:
Student Number:
Section: 2
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**Questions**

**(1)**. Prove that the following limit is correct

$$\lim_{(x,y)\to(0,0)} \frac{5x^5}{x^4+y^4} = 0$$

**Solution**

Similar to a problem we solved in class

$$|f(x)-L| = \left|\frac{5x^5}{x^4+y^4}\right| = 5|x|\frac{x^4}{x^4+y^4} \leq 5|x| \leq 5\sqrt{x^2+y^2} < 5\delta \leq \epsilon \qquad (1)$$

Hence we may take $\delta = \frac{\epsilon}{5}$. Then we have a delta $(= \epsilon/5)$ for every given $\epsilon > 0$