

MA 123 Elementary Calculus and its Applications
Paper Homework 1-4
Due: 27 June 2008

Instructions

Find the answer to each question on scratch paper first. Then carefully present your solution method and explain your reasoning. You need to not only tell me *what* the answer is and *how* you found it, but also *why* your approach gives the correct answer.

To receive the full credit for a question you must have a coherent and reasonably correct solution and justification. The answer need not be correct to receive full credit. Half credit may be awarded in some cases.

1. For what values of z is the function $L(z) = \frac{1}{\sqrt{25-z^2}}$ defined?

2. What values of k will make the function

$$\Psi(x) = \begin{cases} x^2 + 2x - 3 & \text{if } x < k \\ -2x^2 + 3x - 3 & \text{if } x \geq k \end{cases}$$

continuous for all x ?

3. Consider the parabola $f(x) = 2(x-3)^2 - 10$. At what point (a, b) will the line tangent to the graph of $y = f(x)$ (at that point) be perpendicular to the y -axis?

4. Suppose $f(g(x)) = x$ and $f(y) = \frac{3y}{5-y}$. What is $g(z)$?