

Math101 Term191  
Sec 17 Quiz 2

Name	ID	Sr
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**Instruction: CIRCLE one answer and SHOW all your work to get full mark**

Q1) Given  $f(x) = \sqrt{2x + 13}$ , the largest number  $\delta > 0$  such that if  $0 < |x + 2| < \delta$ , then  $|f(x) - 3| < 1$  is

- a)  $3/2$
- b)  $5/2$
- c)  $7/2$
- d)  $9/2$
- e)  $1/2$

Q2)The function  $f(x) = \begin{cases} \frac{\sqrt{x^2+3}-2}{x-1} & \text{if } x > 1 \\ x^2 + 1 & \text{if } x \leq 1 \end{cases}$

- a) has an infinite discontinuity at  $x = 1$
- b) has a removable discontinuity at  $x = 1$
- c) has a jump discontinuity at  $x = 1$
- d) is continuous at  $x = 1$
- e) is continuous on  $(-\infty, \infty)$

Q3) If the function  $f(x) = \begin{cases} \frac{x^2+2x-3}{x-1} & \text{if } x < 1 \\ -2ax^2 + 3bx & \text{if } 1 \leq x < 2 \\ 4x + a - b - 3 & \text{if } x \geq 2 \end{cases}$

is continuous everywhere ,then  $a^2 + b^2 =$

- a) 25
- b) 13
- c) 10
- d) 5**
- e) 16

Q4) which of the following statements is always true?

- I. There is a root on interval (0,1) for the equation  $e^x = 3 - x$
- II. If  $f(-2) = -1$  and  $f(5) = 4$  then  $f(c) = 2$  for at least one  $c$  in  $(-2,5)$ .
- III. If  $f(-2) = -1$  and  $f(5) = 4$  then  $f(c) = 0$  for at least one  $c$  in  $(-2,5)$ .

- a) I only**
- b) II only
- c) III only
- d) I and II only
- e) I and III only
- f) II and III only
- g) I , II and III.