

Quiz 1  
Math 101

(B)

Name:

Computer no.:

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**Choose the correct answer:**

1-  $D_f^y$

- (a)  $D_f$       (b)  $= D_f$       (c)  $\emptyset$       (d) All answers are correct .

2-  $\lim_{x \rightarrow 1} \sqrt{x-1} =$

- (a) Does not exist.      (b) 0.      (c)  $\sqrt{2}$       (d)  $2^{1/2}$

3- If  $f'(x) = \frac{5}{6}x^2$ , then the equation of the tangent line of  $f$  at  $(1, 1)$  is:

- (a)  $y = 0$ .      (b)  $y = 1$       (c)  $y = \frac{5}{3}x$       (d)  $y = \frac{5}{3}x - 1$ .

4- The function  $f(x) = \frac{1}{x-2}$  is ..... at 2

- (a) continuous.      (b) discontinuous.      (c) differentiable.      (d) none of the previous is right.

5- If  $f(x) = \frac{x}{|x|}$ , then  $f'(x) =$

- (a)  $f(x)$       (b)  $|f(x)|$       (c)  $\frac{1}{|f(x)|}$       (d)  $\frac{1}{f(x)}$ .
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**Put True or False in front of the following sentences:**

- 1- (      ) Every differentiable function is continuous.  
 2- (      )  $\lim_{x \rightarrow \sqrt{4}} f(x)$  does not exist.  
 3- (      ) If  $f$  and  $g$  are continuous functions, then  $f^2$  and  $g^5$  are also continuous functions.  
 4- (      )  $(fg + h)' = f'g' + h' = f'g + fg' + h'$ .  
 5- (      ) The function  $f(x) = x^2 + 5x + 1$  has a root in the interval  $(-1, 1)$ .
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**Prove that**

$$\lim_{x \rightarrow 0} \sqrt[3]{x} \sin \frac{1}{\sqrt[3]{x}} = 0.$$