

**Math 151****Show Your Work!**

Good Luck!

Nov. 5, 2019

Quiz #5 A

Name \_\_\_\_\_

(please print)

1.  $x^3 + xy^3 + e^{3y} = 4x + 1$ . (Show your work!)

(4) (a) Calculate  $y'$  at  $(2, 0)$ .  $y' =$  \_\_\_\_\_

(3) (b) The equation of the tangent line to this curve at  $(2, 0)$  is  $L(x) =$  \_\_\_\_\_

(2) (c) Use the tangent line in part (b) to approximate  $y$  when  $x=2.04$ .  $y \approx$  \_\_\_\_\_

2. Use Logarithmic Differentiation to determine a differentiation pattern/rule for  $D(F^G)$

(4) when  $F$  and  $G$  are functions of  $x$ . (Circle your final result.)

$$D(F^G) =$$

3. (a) True False If  $f(3)$  is a max then  $f'(3) = 0$ .

(b) True False If  $f'(3) = 0$  then  $f(3)$  is a max or min of  $f(x)$

(c) True False If  $f'(3) = 2$  then  $f(3)$  is NOT a max or min of  $f(x)$

(1 each)

4. You have 42 feet of fencing to create the pens shown in the diagram.

What dimensions will maximize the total enclosed area?

$x =$  \_\_\_\_\_  $y =$  \_\_\_\_\_ area = \_\_\_\_\_

(4)



Bonus (+1) At what college did David Blackwell teach **or** what was his favorite part of calculus?