

Math 10A with Professor Stankova

Quiz 3; Wednesday, 9/13/2017

Section #106; Time: 10 AM

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Name: \_\_\_\_\_

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Circle True or False or leave blank. (1 point for correct answer,  $-1$  for incorrect answer,  $0$  if left blank)

1. True    False    Let the domain of  $f(x)$  be  $[-1, 3]$ . Then the domain of  $f(2x + 3)$  is  $[2(-1) + 3, 2(3) + 3] = [1, 9]$ .
2. True    False    It is possible for a function to be differentiable but not continuous.

Show your work and justify your answers.

3. (10 points) Let  $f(x) = x^3 \exp(-1/x^2)$  and  $g(x) = f^{-1}(x)$  be the inverse of  $f$ .

(a) (1 point) What is the domain of  $f$ ?

(b) (1 point) Find  $\lim_{x \rightarrow 0} f(x)$ .

(c) (5 points) Find  $f'(x)$ .

(d) (3 points) Given that  $f(1) = 1/e$ , find  $g'(1/e)$ .