

# Math 201 Quiz 3B

September 9, 2019

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

Instructions: No calculators. Use your own scrap. Write your fully simplified answers in the space provided.

1. Complete the following rules:

(a)  $x^a \cdot x^b =$  \_\_\_\_\_ (b)  $(x^a)^b =$  \_\_\_\_\_ (c)  $\log_a(x^n) =$  \_\_\_\_\_

(d)  $\log_a(xy) =$  \_\_\_\_\_ (e)  $\log_a 0 =$  \_\_\_\_\_ (f)  $\log_a 1 =$  \_\_\_\_\_

(g)  $x^{a/b} =$  \_\_\_\_\_ (h)  $\log_a b = c$  means \_\_\_\_\_

(i)  $a^{-x} =$  \_\_\_\_\_ (j)  $\log_a a^x =$  \_\_\_\_\_

2. True or false:  $\log_a(x - y) = \log_a x - \log_a y$  \_\_\_\_\_

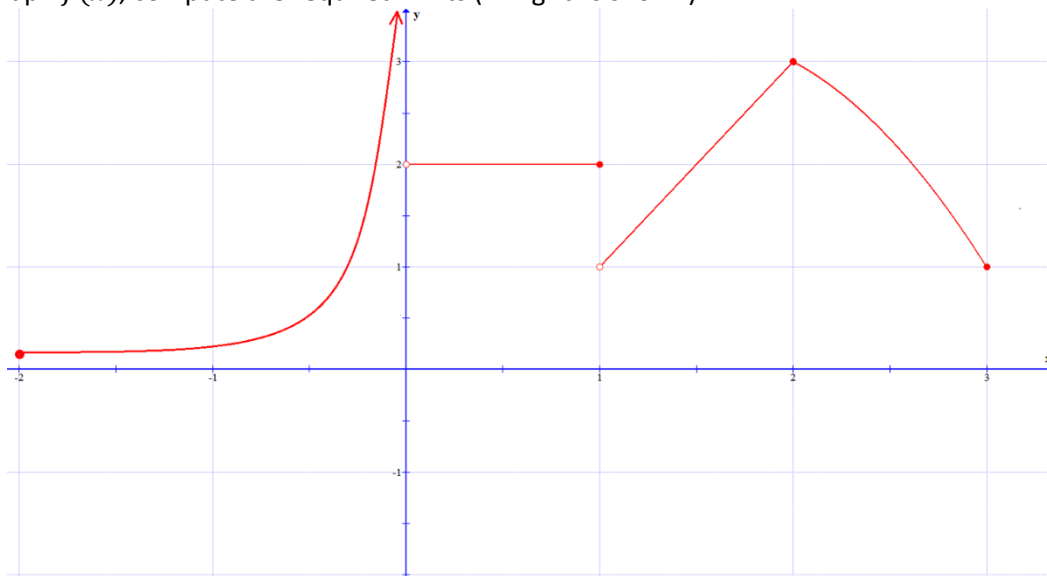
3. Expand and simplify:  $\ln\left(\frac{e^7 \sqrt{ab^3}}{c^5}\right) =$  \_\_\_\_\_

4. Simplify:  $e^{3 \ln \sqrt{9} - 2 \ln x} =$  \_\_\_\_\_

5. Solve the following equations:

(a)  $2e^{4x+1} = 6: \Rightarrow x =$  \_\_\_\_\_ (b)  $\ln \sqrt{x-1} = 2: \Rightarrow x =$  \_\_\_\_\_

6. Given the graph  $f(x)$ , compute the required limits (1x1 grid is shown):



(a)  $\lim_{x \rightarrow 1/2} f(x) =$  \_\_\_\_\_ (b)  $\lim_{x \rightarrow 1} f(x) =$  \_\_\_\_\_ (c)  $\lim_{x \rightarrow 2} f(x) =$  \_\_\_\_\_

**Bonus: (You must attempt all problems above to be eligible)**

1. Compute: (a)  $\lim_{x \rightarrow -1} \frac{x-1}{x^2+1} =$  \_\_\_\_\_ (b)  $\lim_{x \rightarrow 0} \frac{\tan x}{x} =$  \_\_\_\_\_ (c)  $\lim_{x \rightarrow 3} \frac{x+3}{9-x^2} =$  \_\_\_\_\_