

Name:

Math 1190 Ex 1 Pt 1 (1/20/17)

Directions:

- You have 25 minutes to complete this exam. The exam is worth 35 points (out of 100) of your Exam 1 grade.
- NO CALCULATORS or CELL PHONES ANYWHERE IN SIGHT.
- **Read the directions carefully** to make sure you answer the question. Show all work.

(1) (2 points each) Evaluate each expression exactly (answer in radians where appropriate).

(a)  $e^{5 \ln 3} =$

(c)  $\tan^{-1} 1 =$

(b)  $\sin\left(\frac{4\pi}{3}\right) =$

(d)  $\cot\left(\frac{2\pi}{3}\right) =$

(2) (3 points) Find the equation of the line through the point  $(2, 1)$  that is parallel to the line  $3x = 4 - y$ .

(3) (4 points) Sketch the graph of the function  $f$ . Provide a plot over (at least) the interval  $[-2, 2]$ , and label at least two points on the graph.

$$f(x) = \begin{cases} x + 1, & x < 0 \\ e^x, & x \geq 0 \end{cases}$$

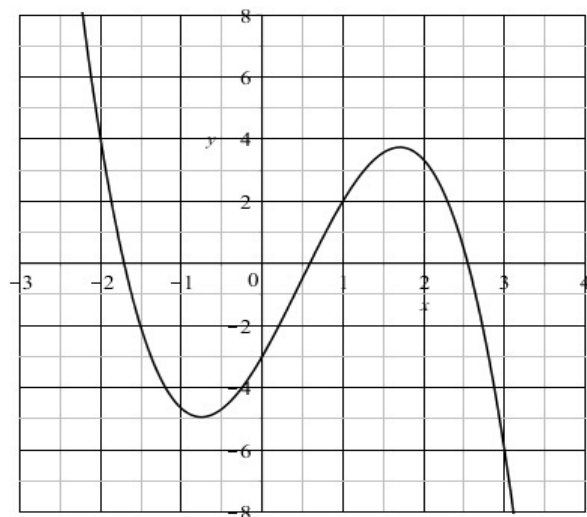
(4) (4 points) Use appropriate properties of logarithms to completely expand the following into a sum, difference, and constant multiple of logarithms.

$$\ln \left( \frac{x\sqrt{x-1}}{6+x^3} \right)$$

(5) (4 points) Solve the equation for  $z$ .  $2xy^2 + z = xy^3 + 3x^2y^2z$

(6) (4 points) Let  $f(x) = 4x^2 - 3$ . Evaluate and simplify  $\frac{f(2+h)-f(2)}{h}$ .

(7) (1 point each) The graph of  $y = f(x)$  is shown in the figure.



Referring to the figure, evaluate or answer each of the following questions.

(a) Evaluate  $f(1)$

(b) Evaluate  $f^{-1}(4)$

(c) How many solutions are there to the equation  $f(x) = 0$ ?

(b) True or False:  $f$  may be a quadratic function.

(8) (4 points) Find all solutions of the equation:

$$-2(x - 2)^{-3}(x + 1)^4 + 4(x - 2)^{-2}(x + 1)^3 = 0$$