Name: _____   Date: _____

QUIZ – EXPONENTIAL FUNCTIONS

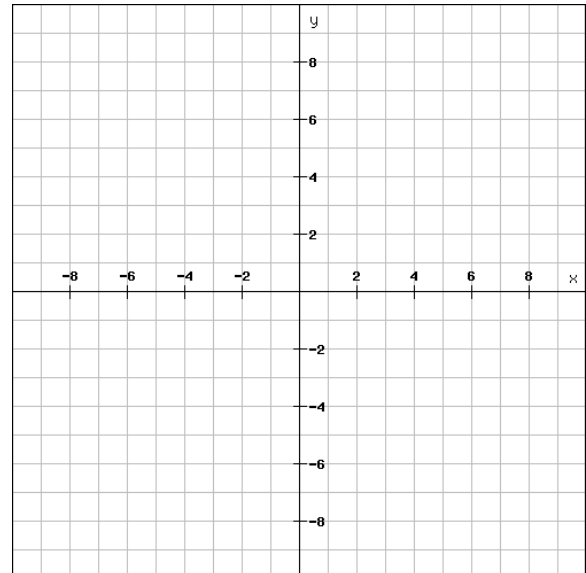1. (27%) Given the function $f(x) = -3^{-3x} + 2$

    a. (2%) Domain:. _____

    b. (5%) y intercept is/are: _____

    c. (5%) x intercept is/are: _____

    d. (5%) Horizontal asymptote: _____

    e. (5%) Sketch the function including asymptotes, <u>label and write the coordinates of the x and y intercept on the graph</u>.
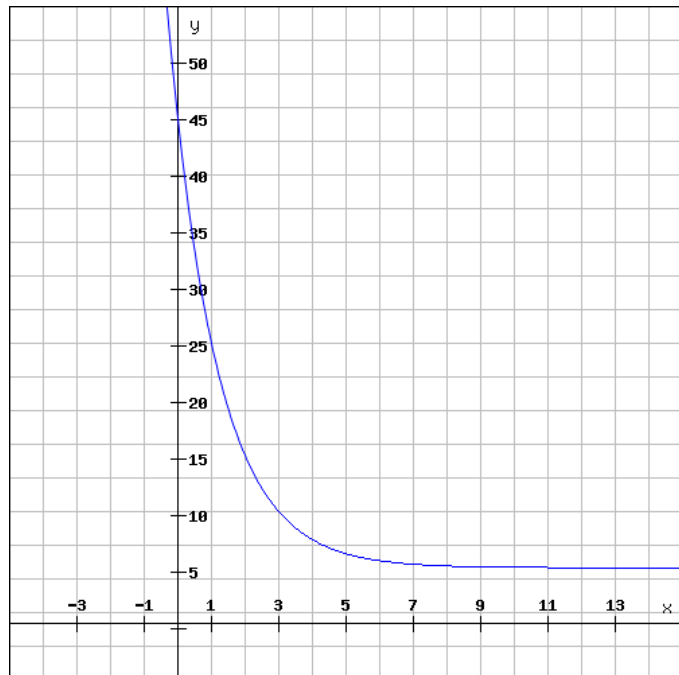
    f. (5%) The range of the function is: _____.

2. (20%) Given the function $y = ke^{at}$ it is know it passes through the points (0, 100) and (2, 10). Find k and a.

3. (23%) The following exponential function models the number of defective products in a certain company. x = 0 corresponds to the year 2000.

a. (7%) Is the company improving its products? Explain.

b. (7%) What is the number of defective products in the year 2003?

c. (9%) What seems to be the number of defective products predicted in the future?

4. (30%) The number of people in a football stadium as the crowd enters it follows the following function. The game starts at 4pm. t is the time measured from the moment the gates open. If the gates open at 3 pm, find:

$$N(t) = 97000 - 97000 \cdot 2^{-0.3t}$$

a. (5%) The number of people in the stadium at 3pm _____

b. (5%) The number of people in the stadium at 3:01pm _____

c. (10%) At what time exactly will the stadium be full?

d. (5%) What is the capacity of the stadium? _____

e. (5%) Write down the equation of the horizontal asymptote _____