Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Group\_\_\_\_\_\_\_\_\_\_ /44

**Logarithmic Functions**

1) Sketch the following functions (4 pts)

|  |  |
| --- | --- |
| a) | b) |

2) For each of the functions below, state the domain, whether the function is increasing or decreasing, the value of the zero, whether a y-intercept exists (Y or N) and the equation of the asymptote. (4 pts)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Domain** | **Increasing Decreasing** | **Zero** | **y-int?** | **Asymptote** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

3) Find the rule of a logarithmic function passing through the points and , with an asymptote at .

(4 pts)

4) Solve the following logarithmic functions (16 pts)

|  |  |
| --- | --- |
| a) | b) |
| c) | d) 2 |
| e) | f) |
| g) | h) |

6) In a manufacturing company, the assembly time (in minutes) varies throughout the training process of their employees according to the rule where *n* is the number of parts assembled. How many parts must be built if the assembly time is 60 minutes?

(4 pts)

7) In 2001, Albert invested $4000. His investment was compounded annually and by 2009 had grown to $5474.28. He eventually was able to triple his initial investment.

At the same time in 2001, Jocelyn invested a sum of money at the same interest rate as Albert’s investment, compounded annually. In the number of years it took Albert to triple his initial investment, Jocelyn’s investment grew to $15,000.

What was Jocelyn’s initial investment?

(4 pts)

8) Kelly loves to simplify logs! Dr. James gives her the following question for practice.



Kelly grumbles at the question for a little while, and then calculates a numerical answer to the above expression. What is Kelly’s answer?

(4 pts)

9) Given , , and

Write the rule for . (4 pts)