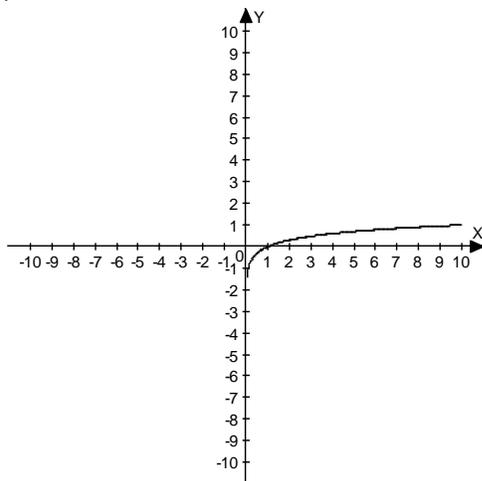


NAME :

MATH133 Unit 5 Individual Project – A

1) Describe the transformations on the following graph of  $f(x) = \log(x)$ . State the placement of the vertical asymptote and x-intercept after the transformation. For example, *vertical shift up 2* or *reflected about the x-axis* are descriptions.



a)  $g(x) = \log(x - 5)$

Description of transformation:

Equation(s) for the Vertical Asymptote(s):

x-intercept in  $(x, y)$  form:

b)  $g(x) = -\log(x) + 2$

Description of transformation:

Equation(s) for the Vertical Asymptote(s):

x-intercept in  $(x, y)$  form:

2) Students in an English class took a final exam. They took equivalent forms of the exam at monthly intervals thereafter. The average score  $S(t)$ , in percent, after  $t$  months was found to be given by

$$S(t) = 68 - 20 \log (t + 1), t \geq 0.$$

a) What was the average score when they initially took the test,  $t = 0$ ?

Answer:

Show your work in this space:

b) What was the average score after 14 months?

Answer:

Show your work in this space:

c) After what time  $t$  was the average score 40%?

Answer:

Show your work in this space:

3) The formula for calculating the amount of money returned for an initial deposit into a bank account or CD (certificate of deposit) is given by

$$A = P \left( 1 + \frac{r}{n} \right)^{nt}$$

$A$  is the amount of the return.

$P$  is the principal amount initially deposited.

$r$  is the annual interest rate (expressed as a decimal).

$n$  is the number of compound periods in one year.

$t$  is the number of years.

Carry all calculations to six decimals on each intermediate step, then round the final answer to the nearest cent.

Suppose you deposit \$3,000 for 6 years at a rate of 7%.

- a) Calculate the return ( $A$ ) if the bank compounds semi-annually. Round your answer to the nearest cent.

Answer:

Show work in this space. Use ^ to indicate the power or use the Equation Editor in MS Word.

- b) Calculate the return ( $A$ ) if the bank compounds monthly. Round your answer to the nearest cent.

Answer:

Show work in this space:

- c) If a bank compounds continuously, then the formula used is  $A = Pe^{rt}$  where  $e$  is a constant and equals approximately 2.7183. Calculate  $A$  with continuous compounding. Round your answer to the nearest cent.

Answer:

Show work in this space: