

NAME :

MATH133 Unit 5 Individual Project – A

1) Solve:

a. $e^{.05t} = 1600$

Answer:

Show your work in this space:

b. $\ln(4x) = 3$

Answer:

Show your work in this space:

c. $\log_2(8 - 6x) = 5$

Answer:

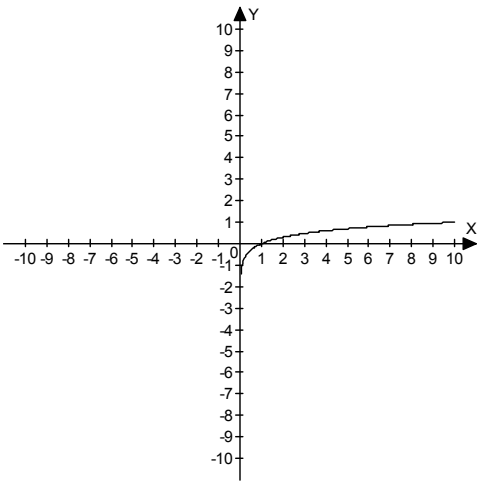
Show your work in this space:

d. $4 + 5e^{-x} = 0$

Answer:

Show your work in this space:

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

Description of transformation:

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

x-intercept in (x, y) form:

3. 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

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

What was the average score when they initially took the test, $t = 0$?
Round your answer to a whole percent, if necessary.

a)

Answer:

Show your work in this space:

What was the average score after 4 months? after 24 months?
Round your answers to two decimal places.

b)

Answer:

Show your work in this space:

After what time t was the average score 50%?
Round your answers to two decimal places.

c)

Answer:

Show your work in this space:

4) 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 \$2,000 for 5 years at a rate of 8%.

a) Calculate the return (A) if the bank compounds annually ($n = 1$). 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 quarterly ($n = 4$). Round your answer to the nearest cent.

Answer:

Show work in this space:

c) If a bank compounds continuously, then the formula used is $A = P e^{rt}$ 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: