

NAME :

MATH133 Unit 5 Individual Project – B

1) Find the domain of the following:

a) $f(t) = 4.5e^t$

Answer:

Explain how you obtained your answer here:

b) $g(x) = \log(x + 3)$

Answer:

Show your work or explain how you obtained your answer here:

c) $g(x) = 2^x$

Answer:

Explain how you obtained your answer here:

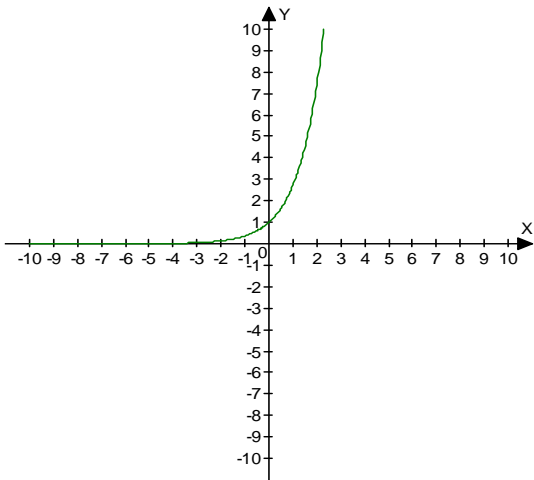
d) $g(t) = \ln(t - 1)$

Answer:

Show your work or explain how you obtained your answer here:

2) Describe the transformations on the following graph of $f(x) = e^x$. State the placement of the horizontal asymptote and y -intercept after the transformation. For example, *horizontal shift to the left 1* or *reflected about the y -axis* are descriptions.

Graph of $f(x) = e^x$



a) $g(x) = e^x - 4$

Description of transformation:

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

y-intercept in (x, y) form

b) $h(x) = -e^x$

Description of transformation:

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

y-intercept in (x,y) form:

- 3) The number of cell phones in use in the United States is increasing exponentially. The number N , in millions, in use can be estimated by

$$N(t) = 7.12 (1.3)^t, \text{ (also can be written as } N(t) = 7.12(1.3)^t)$$

where t is the number of years after 1990.

- a) To estimate the number of cell phones in use in 1995, in 2005, and in 2010, fill in the following table

Answer:

year	t	$N(t)$
1995		
2005		
2010		

Show your work in this space:

- b) Graph the function.

Answer:

- 4) Suppose that the function $P = 13 + 45 \ln x$ represents the percentage of inbound e-mail in the U.S. that is considered spam, where x is the number of years after 2000.

Carry all calculations to six decimals on each intermediate step when necessary.

- a) Use this model to determine the percentage of spam in the year 2003. **Round your answer to two decimal places.**

Answer:

Show your work in this space:

- b) Use this model to determine in how many years (to two decimal places) it will take for the percent of spam to reach 95% provided that law enforcement regarding spammers does not change. **Round your answer to two decimal places.**

Answer:

Show your work in this space: