

Week 2 Tuesday Homework (1319137)

Question 1234567891011121314151617181920

1. Question DetailsSCalcET6 1.5.001. [1289821]

(a) Write an equation that defines the exponential function with base a , ($a > 0$).

$f(x) =$

(b) What is the domain of this function?

- $(0, \infty)$
- (a, ∞)
- $(-\infty, a)$
- \mathbb{R}

(c) If $a \neq 1$, what is the range of this function?

- $(0, \infty)$
- \mathbb{R}
- (a, ∞)
- $(-\infty, a)$

2. Question DetailsSCalcET6 1.5.002. [1288069]

(a) How is the number e defined?

- The value so that the slope of the tangent line to $y = e^x$ at $(0, 1)$ is exactly 1.
- The value so that the slope of the tangent line to $y = x^e$ at $(0, 1)$ is exactly 1.
- The value so that e^x at $x = 0$ is 1.
- The value so that e^{10} is 10.

(b) What is the approximate value for e ? (Give your answer to 5 decimal places.)

$e \approx$

(c) What is the natural exponential function?

$y =$

3. Question DetailsSCalcET6 1.5.013. [1289489]

Starting with the graph of $y = e^x$, write the equation of the graph that results from the following changes.

(a) shifting 6 units downward

$y =$

(b) shifting 3 units to the right

$y =$

(c) reflecting about the x -axis

$y =$

(d) reflecting about the y -axis

$y =$

(e) reflecting about the x -axis and then about the y -axis

$y =$

4. Question DetailsSCalcET6 1.5.015. [667248]
Find the domain of each function.

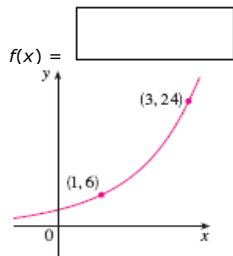
$$(a) f(x) = \frac{6}{1 + e^x}$$

- $(-\infty, \infty)$
 $(0, \infty)$
 $x \neq 1$
 $x \neq 0$

$$(b) f(x) = \frac{1}{1 - e^x}$$

- $x \neq 1$
 $(0, \infty)$
 $x \neq 0$
 $(-\infty, \infty)$

5. Question DetailsSCalcET6 1.5.017. [1288662]
Find the exponential function $f(x) = Ca^x$ whose graph is given.



6. Question DetailsSCalcET6 1.5.024. [667195]
Use a graph to estimate the values of x given by the inequality below. (Give your answer to the nearest hundredth.)
 $e^x > 10,000,000.$

$x >$

7. Question DetailsSCalcET6 1.5.026.MI. [1387953]
A bacteria culture starts with 300 bacteria and doubles in size every half hour.

(a) How many bacteria are there after 4 hours?


[Tutorial](#) (b) How many bacteria are there after t hours?

[Tutorial](#) (c) How many bacteria are there after 40 minutes? (Round your answer to the nearest whole number.)

[Tutorial](#) (d) Graph the population function and estimate the time for the population to reach 30,000. (Give your answer to the nearest tenth.)

hours [Tutorial](#)

8. Question DetailsSCalcET6 1.5.AE.03. [1289607]

[Video Example](#) 
[Online Textbook](#)

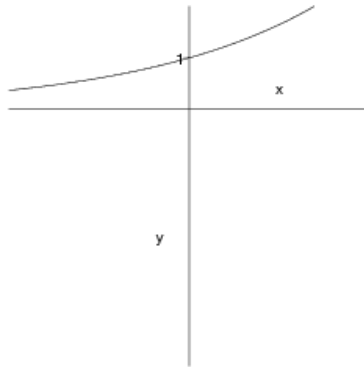
EXAMPLE 3 Graph the function below and state the domain and range.

$$y = \frac{1}{2}e^{-x} - 5$$

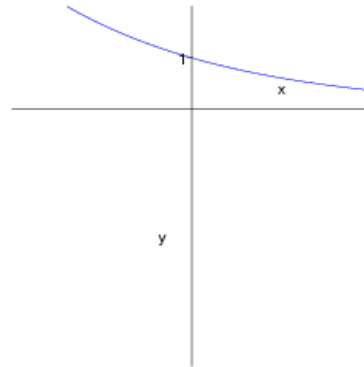
SOLUTION We start with the graph of $y = e^x$ from (a) and reflect about the -axis to get the graph of $y = e^{-x}$ in (b). (Notice that the graph crosses the y -axis with a slope of -1 .) Then we compress the graph vertically by a factor of to obtain the graph of $y =$

in (c). Finally we shift the graph units to get the desired graph in (d). The domain is \mathbb{R} and the range is $(\text{---}, \infty)$.

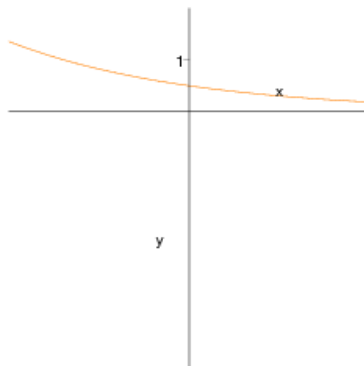
(a) $y = e^x$



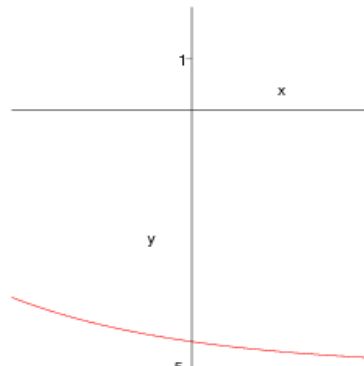
(b) $y = e^{-x}$



(c) $y = \frac{1}{2}e^{-x}$



(d) $y = \frac{1}{2}e^{-x} - 5$



9. Question DetailsSCalcET6 1.6.003. [667202]

A function is given by a table of values. Determine whether it is one-to-one.

x	1	2	3	4	5	6
$f(x)$	14	14.9	16.7	18.5	15.4	15.3

- Yes, it is one-to-one.
 No, it is not one-to-one.

10. Question DetailsSCalcET6 1.6.004. [656843]

A function is given by a table of values. Determine whether it is one-to-one.

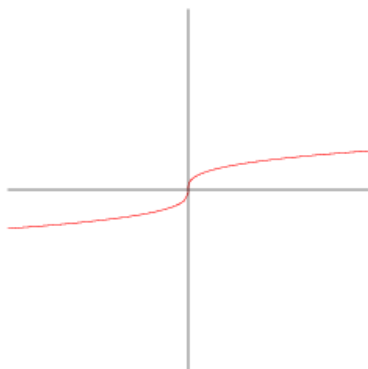
x	1	2	3	4	5	6
$f(x)$	3	6	12	24	48	96

- This function is one-to-one.
- This function is not one-to-one.

11. Question DetailsSCalcET6 1.6.005. [667156]

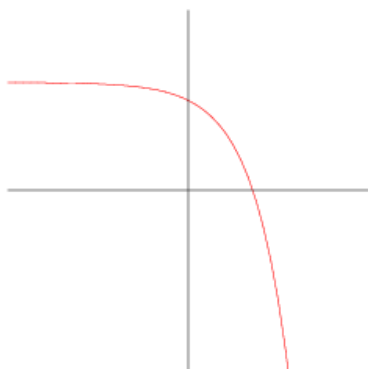
A function is given by a graph. Determine whether it is one-to-one.

- Yes, it is one-to-one.
- No, it is not one-to-one.

**12.** Question DetailsSCalcET6 1.6.008. [656945]

A function is given by a graph. Determine whether it is one-to-one.

- Yes, it is one-to-one.
- No, it is not one-to-one.

**13.** Question DetailsSCalcET6 1.6.AE.03. [667184][Video Example](#) [Online Textbook](#)**EXAMPLE 3** If $f(3) = 6$, $f(4) = 7$, and $f(8) = -9$, find $f^{-1}(7)$, $f^{-1}(6)$, and $f^{-1}(-9)$.**SOLUTION** From the definition of f^{-1} we have

$$f^{-1}(7) = \boxed{} \quad \text{because} \quad f(\boxed{}) = 7$$

$$f^{-1}(6) = \boxed{} \quad \text{because} \quad f(\boxed{}) = 6$$

$$f^{-1}(\boxed{}) = 8 \quad \text{because} \quad f(8) = \boxed{}$$

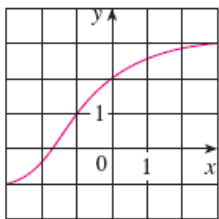
14. Question DetailsSCalcET6 1.6.Tut.03. [667200]

15. Question DetailsSCalcET6 1.6.015. [667173]

If f is a one-to-one function such that $f(-6) = 9$, what is $f^{-1}(9)$?

16. Question DetailsSCalcET6 1.6.018. [667198]

The graph of f is given.



(a) What are the domain and range of f^{-1} ?

(,) (domain)

(,) (range)

(b) What is the value of $f^{-1}(2)$?

(c) Estimate the value of $f^{-1}(0)$ to the nearest tenth.

17. Question DetailsSCalcET6 1.6.022.MI. [1387136]

Find a formula for the inverse of the function.

$$f(x) = \frac{8x - 1}{2x + 9}$$

$f^{-1}(x) =$ [Tutorial](#)

18. Question DetailsSCalcET6 1.6.025. [1289771]

Find a formula for the inverse of the function.

$$y = \ln(x + 9)$$

$$y = \boxed{}$$

19. Question DetailsSCalcET6 1.6.033. [667269]

Find the exact value of each expression.

(a) $\log_5(125)$

(b) $\log_3\left(\frac{1}{81}\right)$

20. Question DetailsSCalcET6 1.6.026. [1289727]

Find a formula for the inverse of the function.

$$y = \frac{e^x}{1 + 7e^x}$$

$$f^{-1}(x) = \boxed{}$$

Assignment Details

Name (AD): **Week 2 Tuesday Homework (1319137)**

Submissions Allowed: **5**

Category: **Homework**

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Author: **Jernigan, John** (jjernigan@ccp.edu)

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