**PROBLEMS AND SOLUTIONS - EXPONENTIAL FUNCTIONS**
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**Please Send Questions and Comments to ingrid.stewart@csn.edu. Thank you!**

**PLEASE NOTE THAT YOU CANNOT ALWAYS USE A CALCULATOR ON THE ACCUPLACER - COLLEGE-LEVEL MATHEMATICS TEST! YOU MUST BE ABLE TO DO SOME PROBLEMS WITHOUT A CALCULATOR!**

**Problem 1:**

Find the following for $f(x) = 2^x$.

a. Domain
b. Coordinates of the x-intercept
c. Coordinates of the y-intercept
d. Equation of the horizontal asymptote

**Problem 2:**

Find the following for $g(x) = \left(\frac{1}{2}\right)^x$.

a. Domain
b. Coordinates of the x-intercept
c. Coordinates of the y-intercept
d. Equation of the horizontal asymptote

**Problem 3:**

Find the following for $k(x) = 2^{x+1} - 5$.

a. Domain
b. Coordinates of the x-intercept. Round to 2 decimal places.
c. Coordinates of the y-intercept
d. Equation of the horizontal asymptote

**Problem 4:**

Find the following for $k(x) = e^x$.

a. Domain
b. Coordinates of the x-intercept
c. Coordinates of the y-intercept
d. Equation of the horizontal asymptote

**Problem 5:**

Find the following for $g(x) = -8e^{3x-4} + 16$.

a. Domain
b. Coordinates of the x-intercept. Round to 2 decimal places.
c. Coordinates of the y-intercept. Round to 2 decimal places.
d. Equation of the horizontal asymptote

The graph has the following shape:

- Coordinates of the y-intercept:

**Problem 6:**

Find the following for $g(x) = -3e^{-6-2x} + 2$.

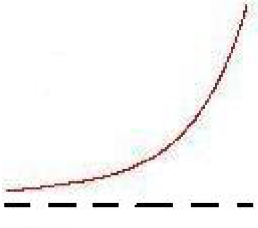
a. Domain
b. Coordinates of the x-intercept. Round to 2 decimal places.
c. Coordinates of the y-intercept. Round to 2 decimal places.
d. Equation of the horizontal asymptote

SOLUTIONS

You can find detailed solutions below the link for this problem set!

**Problem 1:**

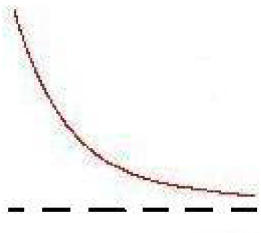
The graph has the following shape:



- Its domain consists of ***All Real Numbers***.
- **NO** x-intercept.
- The coordinates of the y-intercepts are ***(0, 1)***.
- Equation of the Horizontal Asymptote: ***y = 0***

**Problem 2:**

The graph has the following shape:

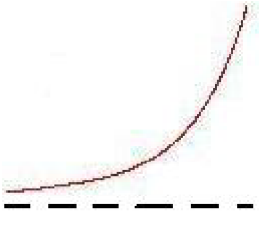


**NOTE:** This function can be changed to the form $g(x) = (\frac{1}{2})^x = (2^{-1})^x = 2^{-x}$. Now we can see that it is actually a reflection of the function $f(x) = 2^x$ about the y-axis.

- Its domain consists of ***All Real Numbers***.
- **NO** x-intercept.
- The coordinates of the y-intercepts are ***(0, 1)***.
- Equation of the Horizontal Asymptote: ***y = 0***

**Problem 3:**

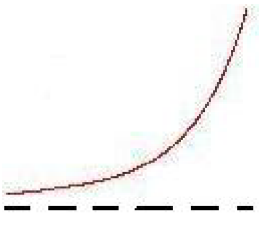
The graph has the following shape:



- Its domain consists of ***All Real Numbers***.
- The coordinates of the x-intercept are approximately ***(1.32, 0)***.
- The coordinates of the y-intercept are ***(0, -3)***.
- Equation of the Horizontal Asymptote: ***y = -5***

**Problem 4:**

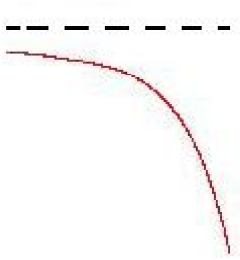
The graph has the following shape:



- Its domain consists of ***All Real Numbers***.
- **NO** x-intercept.
- The coordinates of the y-intercept are ***(0, 1)***.
- Equation of the Horizontal Asymptote: ***y = 0***

**Problem 5:**

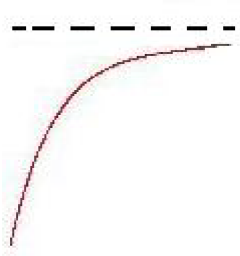
The graph has the following shape:



- Its domain consists of ***All Real Numbers***.
- The coordinates of the x-intercept are approximately ***(1.56, 0)***.
- The coordinates of the y-intercept are ***(0, 15.85)***.
- Equation of the Horizontal Asymptote: ***y = 16***

**Problem 6:**

The graph has the following shape:



- Its domain consists of ***All Real Numbers***.
- The coordinates of the x-intercept are approximately ***(-2.80, 0)***.
- The coordinates of the y-intercept are ***(0, 1.99)***.
- Equation of the Horizontal Asymptote: ***y = 2***