

Name: _____

☀ AP Calculus BC Summer Assignment ☀

Section 1-1: Lines

Complete each problem. Show your work.

1) Find the value of y that corresponds to $x = 3$ in $y + 2 = 4(x - 3)$.

2) Find the value of m that corresponds to the values of x and y given:

$$x = -1, y = -3 \text{ given } m = \frac{2-y}{3-x}$$

3) Determine whether each ordered pair is a solution to the equation $3x - 4y = 5$:

a. $\left(2, \frac{1}{4}\right)$

b. $(3, -1)$

4) Find the distance between $(2, 1)$ and $\left(1, -\frac{1}{3}\right)$.

5) Solve $4x - 3y = 21$ for y in terms of x .

Section 1-2: Functions and Graphs

Solve and express your answer in set notation. Show your work.

6) $3x - 1 \leq 5x + 3$

7) $x(x - 2) > 0$

8) $|x - 3| \leq 4$

9) $|x - 2| \geq 5$

10) $x^2 < 16$

11) $11 - x^2 \geq 36$

12) Describe how the graph of $f(x) = x^2$ can be transformed to the graph of $g(x) = (x + 2)^2 - 3$.

13) Consider $f(x) = x^2 - 5$. Find all real solutions if:

a. $f(x) = 4$

b. $f(x) = -6$

Section 1-3: Exponential Functions

Sketch a graph of the function. State its domain and range.

14) $y = -2^x + 3$

15) $y = 3e^x - 2$

16) The number of bacteria in a petri dish culture after t hours is $B = 100e^{0.693t}$.

a. What is the initial number of bacteria present?

b. How many bacteria are present after 6 hours?

c. Estimate the doubling time of the bacteria.

17) Consider the set of data below which represents the population of Texas. Use your graphing calculator to build an exponential regression equation and determine how well it estimated the actual 2003 population of 22,119,000.

Year	Population (thousands)
1980	14,229
1990	16,986
1995	18,959
1998	20,158
1999	20,558
2000	20,852