

2.2 Change in Linear and Exponential Functions

AP Precalculus

Name: _____

CA #2

A function has the following coordinate points. Could the function represent a linear function, exponential function, or neither?

1. $(5, 4), (6, -2), (7, -8)$

2. $(-3, \frac{1}{2}), (-2, 2), (-1, 8)$

3. $(21, 6), (22, 2), (23, 1)$

The following functions are either linear or exponential. Which is it? Justify your answer.

4.

x	3	5	7
$f(x)$	16	4	1

5.

x	-5	0	5
$f(x)$	101	51	1

Is each function linear or exponential. Identify the constant (slope or ratio) that causes the output values to change?

6. $y = \frac{2}{7} \cdot 4^x$

7. $y = -x + 2$

8. $y + 1 = 3 \cdot \left(\frac{9}{4}\right)^{x-6}$

9. $y - 6 = -2(x + 4)$

It is known that $f(x)$ is a linear function and that it passes through the given points. Write an equation for this function.

10. $(2, 9)$ and $(5, 19)$

11. $(1, 10)$ and $(6, 2)$

It is known that $f(x)$ is an exponential function and that it passes through the given points. Write an equation for this function.

12. (2, 9) and (5, 19)

13. (1, 10) and (6, 2)

Answers to 2.2 CA #2

1. linear	2. exponential	3. neither	4. Exponential because for each input change of 2, f changes proportionally by a ratio of $\frac{1}{4}$.		
5. Linear because for each input change of 5, f changes at a constant rate -50 .		6. Ratio of 4	7. Slope of -1	8. Ratio of $\frac{9}{4}$	9. Slope of -2
10. $y - 9 = \frac{10}{3}(x - 2)$ or $y - 19 = \frac{10}{3}(x - 5)$	11. $y - 10 = -\frac{8}{5}(x - 1)$ or $y - 2 = -\frac{8}{5}(x - 6)$	12. $y = 9 \cdot \left(\sqrt[3]{\frac{19}{3}}\right)^{x-2}$ or $y = 19 \cdot \left(\sqrt[3]{\frac{19}{3}}\right)^{x-5}$		13. $y = 10 \cdot \left(\sqrt[5]{\frac{1}{5}}\right)^{x-1}$ or $y = 2 \cdot \left(\frac{1}{3}\right)^{x-6}$	