

2.4 Linear, Exponential or Neither?

A Practice Understanding Task



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For each representation of a function, decide if the function is linear, exponential, or neither.
 Give at least 2 reasons for your answer.

1.

Linear Exponential Neither

Why? *straight*
 constant Rate of change - slope
 Continuous

2. Tennis Tournament

Rounds	1	2	3	4	5
Number of Players left	64	32	16	8	4

There are 4 players remaining after 5 rounds

Linear Exponential Neither

Why? *Discrete*
curved
 $\times \frac{1}{2}$

3.

$$y = 4x$$

Linear

Exponential

Neither

Why?

constant slope
4

Continuous

4.

This function is decreasing at a constant rate

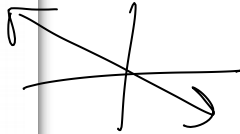
Linear

Exponential

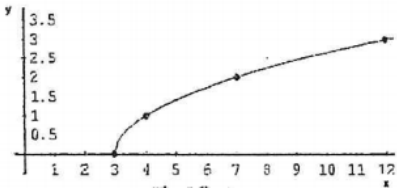
Neither

Why?

constant Rate
Decreasing



5.



Linear

~~Exponential~~

Neither

Why?

No constant Rate

6.
A person's height as a function of a person's age
(from age 0 to 100)

Linear Exponential Neither

Why? No constant slope or Rate

Continuous

7.

$$-3x = 4y + 7$$

$$\frac{-3x - 7}{4} = \frac{4y}{4}$$

$$y = -\frac{3}{4}x - \frac{7}{4}$$

Linear Exponential Neither

Why? Slope = $-\frac{3}{4}$

Continuous

8.

	x	y	
+2	-2	23	-18
+2	0	5	-18
+2	2	-13	-18
+2	4	-31	-18
+2	6	-49	-18

Linear Exponential Neither

Why? $\frac{-18}{2} = -9$ Constant Rate of change

Discrete

9.

Height in inches	Shoe Size
62	6
74	13
70	9
67	11
53	4
58	7

Linear

Exponential

Neither

Why?

no constant slope
OR Ratio

10.

The number of cell phone users in Centerville as a function of years, if the number of users is increasing by 75% each year.

Linear

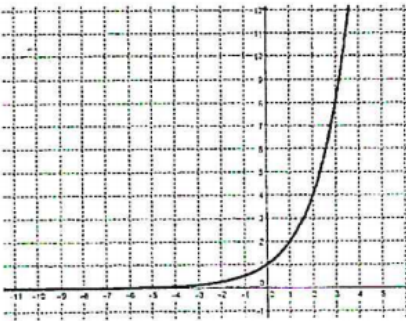
Exponential

Neither

Why?

increase by % → not same # everytime
Discrete → people + phones

11.



Linear

Exponential

Neither

Why?

Curve
multiply
Continuous

12.

The time it takes you to get to work as a function the speed at which you drive

Linear

Exponential

Neither

Why? Speed can change
usually constant
Continuous

13.

$$y = 7x^2$$

Linear

~~Exponential~~

Neither

Why?

Quadratic

14.

Each point on the graph is exactly $\frac{1}{3}$ of the previous point.

Linear

Exponential

Neither

Why?

Multiply by $\frac{1}{3}$
Curve

15.

$$f(1) = 7, f(2) = 7, f(n) = f(n-1) + f(n-2)$$

7, 7, 14, 21, 35...

Linear

Exponential

Neither

Why?

No constant rate
OR multiply

Discrete

16.

$$f(1) = 1, f(n) = \frac{2}{3}f(n-1)$$

Linear

Exponential

Neither

Why?

Multiply by $\frac{2}{3}$

Continuous