

Explain, in a (complete) sentence or two, your reasoning.

1. Let f be the function defined by $f(x) = \sin(x) + \cos(x)$, and let g be the function defined by $g(u) = \sin(u) + \cos(u)$, for all real numbers x and u . Then
 - A. f and g are exactly the same function
 - B. if x and u are different numbers, f and g are different functions
 - C. not enough information is given to determine if f and g are the same

2. If $f(x) = \frac{x^2-4}{x-2}$ and $g(x) = x + 2$, then the functions $f(x)$ and $g(x)$ are equal.
 - A. True
 - B. False

Graph these functions. Explain.

3. You were once exactly 3 feet tall.
 - A. True
 - B. False

6. Make a table of the average rates of change of $g(x)$ and $h(x)$ between 0 and 1, 1 and 2, 2 and 3, and so on, until 9 to 10. Do you see the patterns?

Interval	Avg R.o.C. of $g(x)$	Avg R.o.C. of $h(x)$
(0, 1)		1
(1, 2)		
(2, 3)	0.4	
(3, 4)		7
(4, 5)		
(5, 6)	3.2	
(6, 7)		
(7, 8)	2.56	
(8, 9)		17
(9, 10)		

7. Graph the functions $g(x)$ and $h(x)$ in the domain between $x = 0$ and $x = 20$. Are they similar? Different? In what ways?

8. Consider the function

$$f(x) = \frac{(3x^4 - 7x^3 - 3x)}{(x^2 - x + 2)(2^x + 2^{-x})}.$$

(a) Graph $2 \cdot f(x)$. Graph $3 \cdot f(x)$. Graph $5 \cdot f(x)$. Graph $10 \cdot f(x)$. Graph $\frac{1}{2} \cdot f(x)$. Meditate.

(b) Graph $f(2x)$. Graph $f(3x)$. Graph $f(5x)$. Graph $f(10x)$. Graph $f(\frac{1}{2}x)$. Meditate.