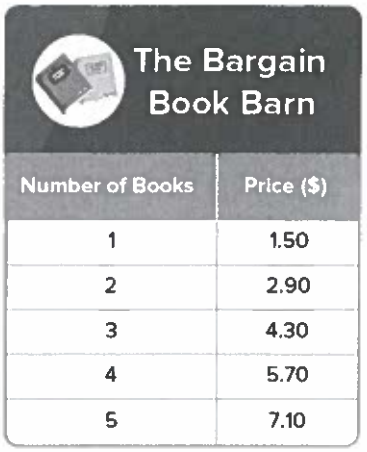
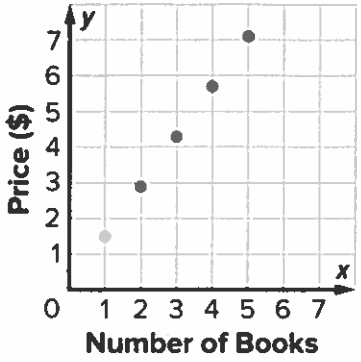
Discrete and Continuous Functions Notes (Part 1)

1. The Bargain Book Barn sells young adult novels on a sliding scale. That is, the more books you buy, the cheaper they are. Let $f(x)$ model the store's prices for given quantities. Is $f(x)$ *discrete* or *continuous*? Explain your reasoning.



The Bargain Book Barn	
Number of Books	Price ($)
1	1.50
2	2.90
3	4.30
4	5.70
5	7.10



Discrete

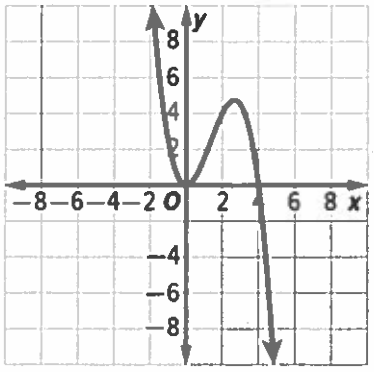
2. At the end of 2017, the average retail price of bananas was $0.56 per pound. The table shows the price, in dollars, for various weights of bananas, in pounds. Let f(x) model the price for a given weight.

Is this situation discrete or continuous?

Weight (lbs)	Price ($)
1	0.56
1.5	0.84
2	1.12
3	1.68
5	2.80

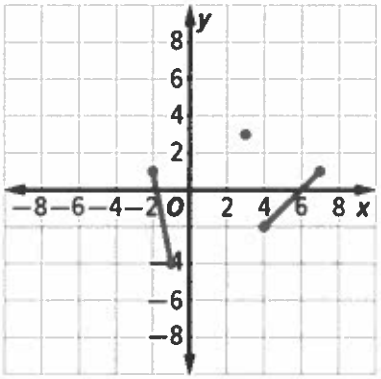
3. Determine whether $f(x)$ and $g(x)$ are *continuous*, *discrete,* or *neither*. Explain your reasoning.

a.



C

b.



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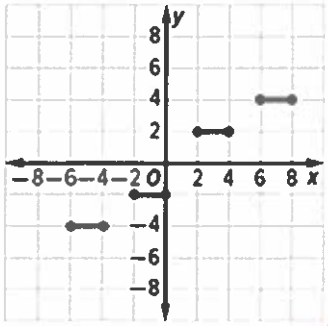
Discrete and Continuous Functions Notes (Part 1)

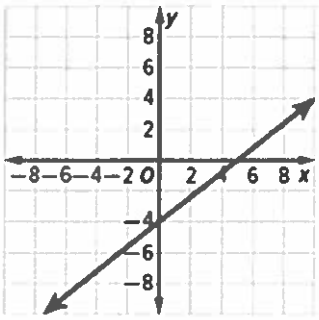
4. Determine which graphs below are continuous, discrete, or neither.

a.



N

b.



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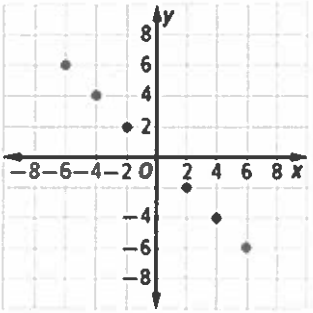
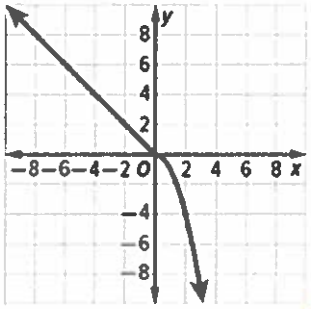
c.



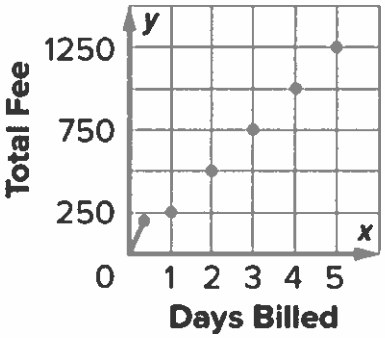
D

d.

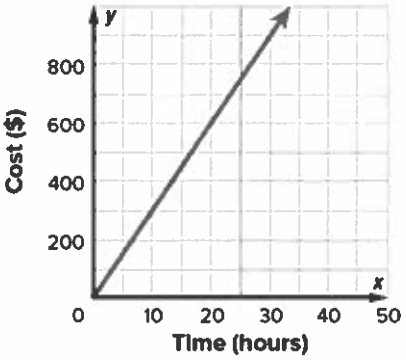


C

5. As a private investigator, Tia charges $25 per hour for any amount of time up to eight hours and then a flat rate of $250 per day. Use the graph to determine if the function that models this situation is *discrete*, *continuous*, or *neither*.



6. Imani pays $30 per hour, for any part of an hour, for her weekly piano lessons. Use the graph to determine if the function that models this relationship is *continuous*, *discrete*, or *neither*.



Identifying Linear Functions by Graphing

7. Fernando uses a garden hose to fill his empty pool. The table shows the amount of water in the pool after every five minutes.

Time (min)	Water (gal)
5	60
10	120
15	180
20	240
25	300

I: (x) Time
D: (Y) Gal.
$\frac{y}{x}$

a. Is this situation linear?

Straight line: Slope

$\frac{\Delta y}{\Delta x} = \frac{60}{5} = \frac{12}{1}$

Yes

b. Graph it.

Identifying Linear Functions by Graphing

8. Marta is driving from Seattle, Washington, to Dallas, Texas. She records the distance traveled after various numbers of hours in a table.

Time (hours)	2	3	5	6	9	10	11
Distance (miles)	86	129	218	261	389	389	475

1 2 1 3 1 1

43 89 0

a. Is this function linear?

Slope: $\frac{y}{x} : \frac{\text{miles}}{\text{Hour}} : \frac{43}{1}$

$\frac{89}{2} : \frac{44.5}{1}$

No

b. Describe its continuity.

Continuous