

Find the common difference of the arithmetic sequence.

1.) 10, 8, 6, 4, ...

$$d = -2$$

2.)  $1, \frac{4}{3}, \frac{5}{3}, 2, \dots$

$$d = \frac{1}{3}$$

3.)  $-7x, -4x, -x, 2x, \dots$

$$d = 3x$$

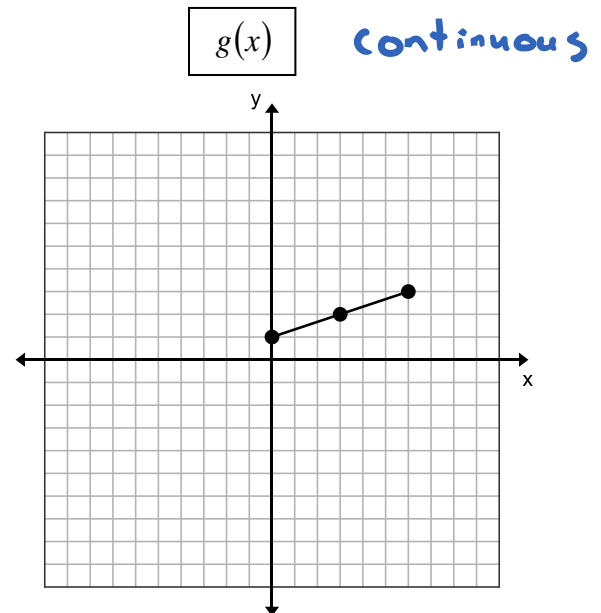
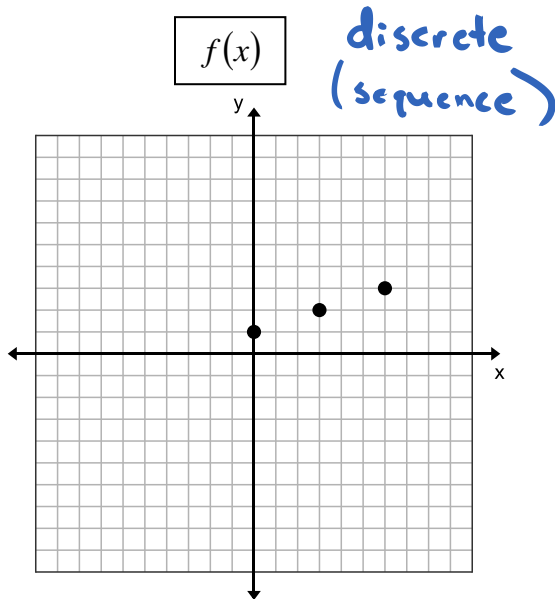
4.)  $x, 2x+1, 3x+2, \dots$

$$d = x+1$$

5.)  $1, \frac{3}{4}, \frac{1}{2}, \frac{1}{4}, \dots$

$$d = -\frac{1}{4}$$

6.) Identify if the given function represents a discrete relationship or a continuous relationship.



$h(x)$  represents the number of cars going through an intersection

discrete

$j(x)$  represents the area of a square.

continuous

Arithmetic Sequence Formula :

$$a_n = a_1 + (n-1)d$$

1<sup>st</sup> term                      common difference  
↓                                      ↓

Find the  $n^{\text{th}}$  term of the arithmetic sequence.

7.) 2, 6, 10, 14, ...

$$a_n = 2 + (n-1)4$$

$$a_n = 2 + 4n - 4$$

$$a_n = 4n - 2$$

8.) 6, 11, 16, 21, ...

$$a_n = 6 + (n-1)5$$

$$a_n = 6 + 5n - 5$$

$$a_n = 5n + 1$$

9.) 3, -2, -7, -12, ...

$$a_n = 3 + (n-1)(-5)$$

$$a_n = 3 - 5n + 5$$

$$a_n = -5n + 8$$

b. Find  $f(40)$ .

$$a_{40} = 4(40) - 2$$

$$a_{40} = 160 - 2$$

$$a_{40} = 158$$

b. Find  $a_{50}$ .

$$a_{50} = 5(50) + 1$$

$$a_{50} = 250 + 1$$

$$a_{50} = 251$$

b. Find the 20<sup>th</sup> term.

$$a_{20} = -5(20) + 8$$

$$a_{20} = -100 + 8$$

$$a_{20} = -92$$

10.) Which function below generates the sequence: -6, -2, 2, 6, ...

(a)  $f(n) = 6 + 4n$

(b)  $f(n) = 6 - 4n$

(c)  $f(n) = -6 - 4n$

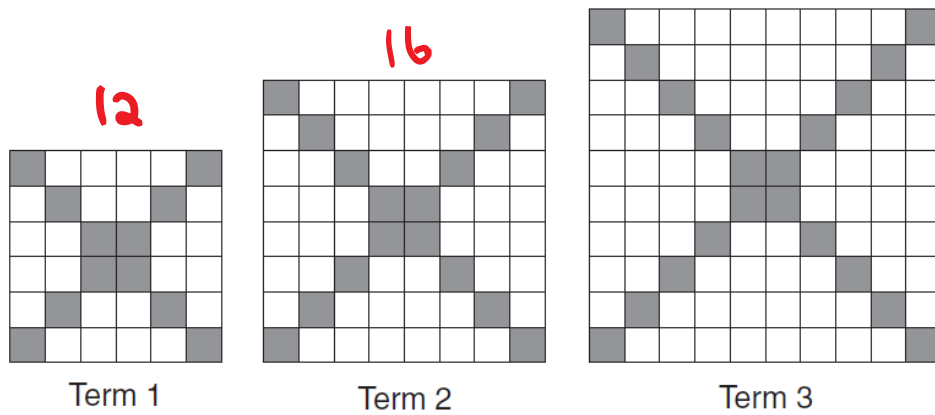
(d)  $f(n) = -10 + 4n$

$$a_n = -6 + (n-1)4$$

$$a_n = -6 + 4n - 4$$

$$a_n = 4n - 10$$

11.) The diagrams below represent the first three terms of a sequence.



Assuming the pattern continues, which formula determines  $a_n$  the number of shaded squares in the  $n^{\text{th}}$  term?

- (a)  $a_n = 4n + 12$     **(b)  $a_n = 4n + 8$**     (c)  $a_n = 4n + 4$     (d)  $a_n = 4n + 2$

$$a_n = 12 + (n-1)4$$

$$a_n = 12 + 4n - 4$$

$$a_n = 4n + 8$$