Determine if each are arithmetic

1. $\{-7, -9, -11, -13 \ldots\}$

DI: $-2, -2, -2$

DI: $t_2 - t_1$
$t_3 - t_2$
$t_4 - t_3$

2. $\{-3, 1, 5, 9, \ldots\}$

DI: $4 \quad 4 \quad 4$

3. If the following sequence is arithmetic, determine x.

$\{5+x, 8, 1+2x \ldots\}$

$t_2 - t_1 = t_3 - t_2$

$8 - (5+x) = 1+2x - 8$

$3 - x = -7 + 2x$

$-3x = -10$

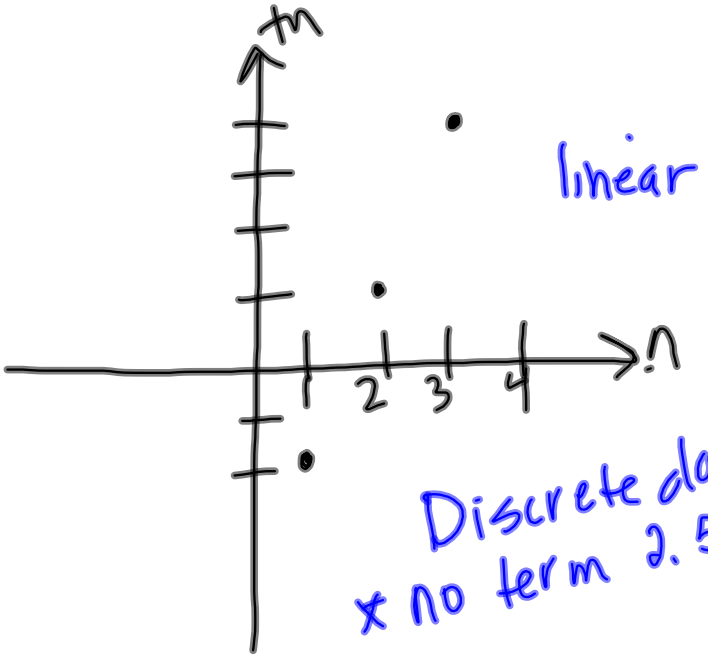
$x = \frac{10}{3}$

Because Arithmetic Sequences have a constant difference, they are similar to linear functions. (But domain is natural #'s)

ex1)

$t_n = 3n - 5$

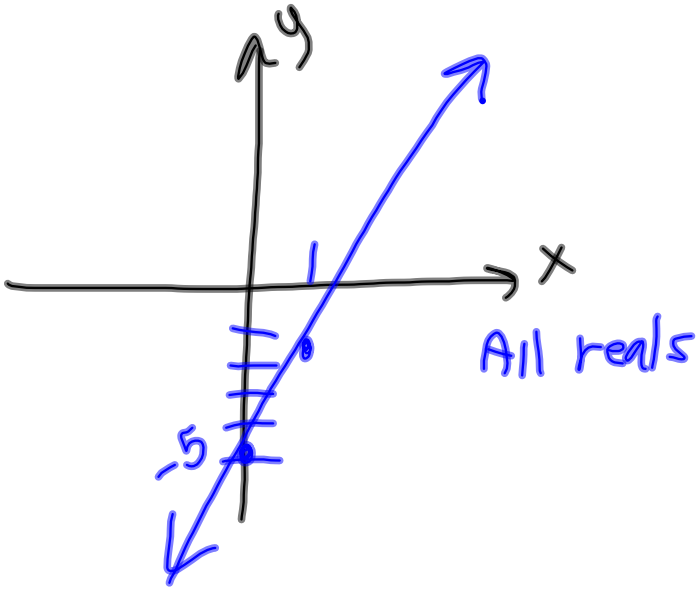
n	t_n
1	-2
2	1
3	4
4	7



linear

Discrete data
x no term 2.5

$y = 3x - 5$
$(y = mx + b)$



All reals

Create the sequence, is it arithmetic?

1. $t_n = -2n + 6$

$t_1 = -2(1) + 6 = 4$

$t_2 = -2(2) + 6 =$

$\{4, 2, 0, -2, -4 \ldots\}$

Arithmetic $D = -2$

2. $t_n = \frac{1}{2}n + 3$

$\{3.5, 4, 4.5, 5, 5.5, \ldots\}$

Arithmetic $D = 1/2$

3. $t_n = n^2 - n + 1$ quadratic

$\{1, 3, 7, \ldots\}$

Determining the general formula, t_n, for given Arithmetic Sequences.

★ Formula Given

$t_n = t_1 + d(n-1)$

book

$t_n = t_1 + (n-1)d$

1. $\{5, 8, 11, 14 \ldots\}$ (t_1)

Δ 3, 3, 3

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

$= 5 + 3n - 3$

$t_n = 3n + 2$

2. $\{-9, -11, -13, -15, \ldots\}$

$t_n = -9 - 2(n-1)$

$= -9 - 2n + 2$

$= -2n - 7$