

### Answer on question #55768 – Math – Calculus

For the sequence given by  $a_n = 4n + 5$ , answer the following: Note in the  $a_n$  the  $n$  is little.

- Find the first five terms.
- Find the sum of the first 25 terms.
- Is this an arithmetic sequence? And how.

#### Solution

a.

$$\begin{aligned}a_1 &= 9, \\a_2 &= 13, \\a_3 &= 17, \\a_4 &= 21, \\a_5 &= 25.\end{aligned}$$

b.

$$S_{25} = \frac{a_1 + a_{25}}{2} n = \frac{9 + 105}{2} 25 = 57 \cdot 25 = 1425$$

c.

If  $a_n = 4n + 5$ , then

$$a_{n-1} = 4(n-1) + 5,$$

$$a_{n-1} = 4n - 4 + 5$$

$$a_{n-1} = 4n + 1.$$

$$\text{Consider } a_n - a_{n-1} = 4n + 5 - (4n + 1) = 5 - 1 = 4$$

Yes, this is arithmetic sequence, because the difference between one term and the next is a constant.

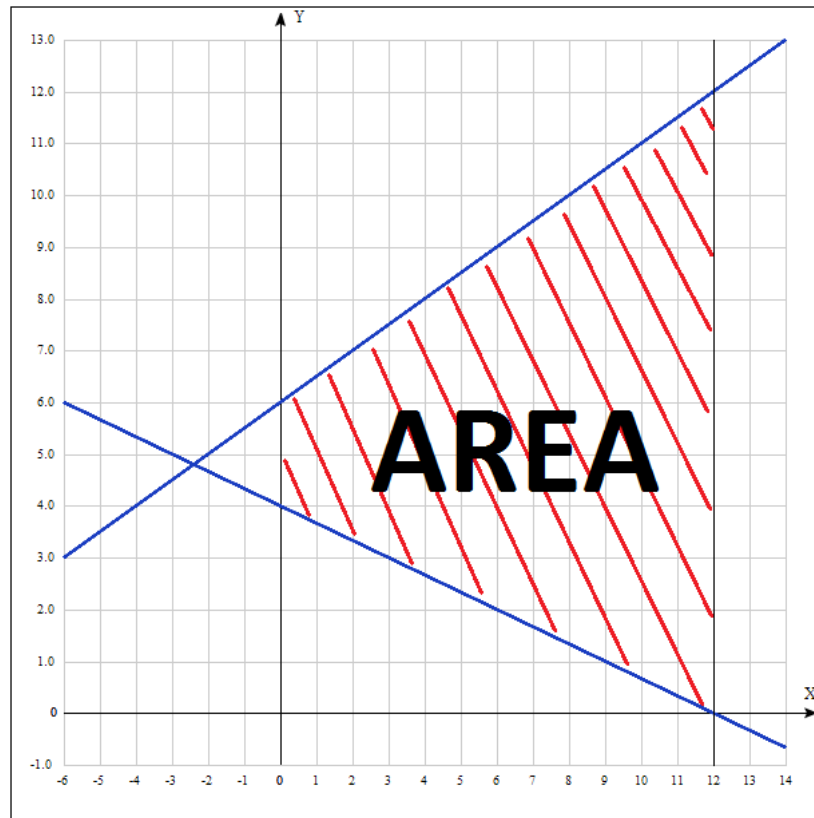
Sequence is given by  $a_n = 4n + 5$ .

Graph the area bounded by  $y < \frac{1}{2}x + 6$ ,  $x + 3y \geq 12$ ,  $x \geq 0$ , and  $x \leq 12$

#### Solution

The first inequality is  $y < \frac{1}{2}x + 6$ .

The second inequality is  $x + 3y \geq 12$ , which can be rewritten as  $3y \geq 12 - x$ , hence  $y \geq 4 - x/3$ .



For the function defined by

$$\{ x^2, x \leq 1 \}$$

$$f(x) = \{ 2x + 1, x > 1 \}$$

a. Evaluate  $f(0)$

b. Graph  $f(x)$

**Solution**

$$f(x) = \begin{cases} x^2, & x \leq 1, \\ 2x + 1, & x > 1 \end{cases}$$

so there are my solution.

a.

$$f(0) = 0^2 = 0.$$

b.

