



1 Determina cuáles de las siguientes sucesiones son aritméticas. Si la sucesión es aritmética, encuentra la diferencia y el término n -ésimo para cada sucesión.

- a) 2, 7, 12, 17, 22, 27, ...
- b) 10, 4, -2, -8, -14, ...

- c) $\frac{5}{2}, \frac{11}{6}, \frac{7}{6}, \frac{1}{2}, -\frac{1}{6}, \dots$
- d) $e^1, e^2, e^3, e^4, e^5, \dots$

- e) $\frac{13}{6}, \frac{17}{12}, \frac{2}{3}, \dots$

a = 2, 7, 12, 17, 22, 27
 $a_n = a_1 + (n-1)d$

b = 10, 4, -2, -8, -14
 $a_n = a_1 + (n-1)d$

c = No es aritmética

d = e^1, e^2, e^3, e^4, e^5

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

2 Identifica cuáles sucesiones son aritméticas. Luego escribe los cinco primeros términos de aquellas que lo sean.

a) $a_n = 4 \cdot n$

e) $(a_n = -n + 8)$

f) $a_n = \frac{1}{2+n}$ X

b) $(a_n = \frac{2}{n+2})$

d) $a_n = n + \frac{\pi}{2}$ X

f) $a_n = -\frac{2}{3}(n-1) + 2$ X

a No es aritmética

c = 7, 6, 5, 4, 3

b =

b) $a_2 = \frac{2}{1+2} = \frac{2}{3}$

$a_3 = \frac{2}{2+2} = \frac{2}{4}$

$a_4 = \frac{2}{3+2} = \frac{2}{5}$

$a_5 = \frac{2}{4+2} = \frac{2}{6}$

$a_6 = \frac{2}{5+2} = \frac{2}{7}$

27 Encuentra el valor de cada suma.

a) $\sum_{n=1}^7 \frac{1}{2n}$

c) $\sum_{n=1}^5 (+1)^{n+1} n^2$

e) $\sum_{n=1}^9 \frac{3n-1}{n}$

g) $\sum_{n=1}^{10} \left(\frac{1}{\sqrt{n}}\right)$

b) $\sum_{n=1}^7 \frac{1}{n-1}$

d) $\sum_{n=1}^5 3^n(n+1)$

f) $\sum_{n=1}^5 \left(\frac{2}{7}\right)^{n-1}$

h) $\sum_{n=1}^7 \left(1 + \frac{2}{n}\right)$

a) $= \frac{1}{2} + \frac{1}{4} + \frac{1}{6} = \frac{11}{12}$

b) $= \frac{1}{10} + \frac{1}{63} + \frac{1}{80} + \frac{1}{99} = \frac{36}{55}$

c) $= 1 + 4 + 9 + 16 + 25 + 36 + 49 + 64 = 204$

d) $= (3^1 \cdot 1 + 1) + (3^2 \cdot 2 + 1) + (3^3 \cdot 3 + 1) + (3^4 \cdot 4 + 1) + (3^5 \cdot 5 + 1) = 1.646$

Scribe

$$E = \frac{3 \cdot 1 - 1}{1} + \frac{3 \cdot 2 - 1}{2} + \frac{3 \cdot 3 - 1}{3} +$$
$$\frac{3 \cdot 4 - 1}{4} + \frac{3 \cdot 5 - 1}{5} + \frac{3 \cdot 6 - 1}{6} +$$

$$\frac{3 \cdot 7 - 1}{7} + \frac{3 \cdot 8 - 1}{8} + \frac{3 \cdot 9 - 1}{9}$$

$$= 2 + \frac{6-1}{2} + \frac{9-1}{3} + \frac{12-1}{4} + \frac{15-1}{5} +$$

$$\frac{18-1}{6} + \frac{21-1}{7} + \frac{24-1}{8} + \frac{27-1}{9}$$

$$= \frac{60911}{2520}$$

$$G = \left(\frac{1}{\sqrt{1}} - \frac{1}{\sqrt{1+1}} \right) + \left(\frac{1}{\sqrt{2}} - \frac{1}{\sqrt{2+1}} \right) + \left(\frac{1}{\sqrt{3}} - \frac{1}{\sqrt{3+1}} \right) +$$

$$\left(\frac{1}{\sqrt{4}} - \frac{1}{\sqrt{4+1}} \right) + \left(\frac{1}{\sqrt{5}} - \frac{1}{\sqrt{5+1}} \right) + \left(\frac{1}{\sqrt{6}} - \frac{1}{\sqrt{6+1}} \right) + \left(\frac{1}{\sqrt{7}} - \frac{1}{\sqrt{7+1}} \right)$$

$$+ \left(\frac{1}{\sqrt{8}} - \frac{1}{\sqrt{8+1}} \right) + \left(\frac{1}{\sqrt{9}} - \frac{1}{\sqrt{9+1}} \right) + \left(\frac{1}{\sqrt{10}} - \frac{1}{\sqrt{10+1}} \right)$$

$$> 1 - \frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}} + \frac{1}{\sqrt{3}} + \left(\frac{1}{\sqrt{3}} - \frac{1}{2} \right) + \frac{1}{2} - \frac{1}{\sqrt{5}} +$$

$$\frac{1}{\sqrt{5}} - \frac{1}{\sqrt{6}} + \frac{1}{\sqrt{6}} - \frac{1}{\sqrt{7}} + \left(\frac{1}{\sqrt{7}} - \frac{1}{2\sqrt{2}} \right) + \left(\frac{1}{2\sqrt{2}} - \frac{1}{3} \right)$$

$$= \frac{1}{3} - \frac{1}{\sqrt{10}} + \frac{1}{\sqrt{10}} - \frac{1}{\sqrt{11}}$$

$$= 1 - \frac{\sqrt{11}}{11}$$

$$H = \left(1 + \frac{2}{1}\right) + \left(1 + \frac{2}{2}\right) + \left(1 + \frac{2}{3}\right) + \left(1 + \frac{2}{3}\right) +$$

$$\left(1 + \frac{2}{4}\right) + \left(1 + \frac{2}{5}\right) + \left(1 + \frac{2}{6}\right) + \left(1 + \frac{2}{7}\right)$$

$$= 3 + (1+1) + \frac{5}{3} + \frac{3}{2} + \frac{7}{5} + \frac{4}{3} + \frac{2}{7}$$

$$= 3 + 2 + \frac{5}{3} + \frac{3}{2} + \frac{7}{5} + \frac{4}{3} + \frac{2}{7}$$

$$= 5 + \frac{503}{70}$$

$$= \frac{853}{70}$$

3 Halla la suma de los diez primeros términos de cada sucesión.

a $a_n = 5^n - 5^{n-1}$

c $a_n = n2^{n-1}$

e $a_n = 2n(2n-1)$

b $a_n = \frac{1}{n(n+1)(n+2)}$

d $a_n = \left(\frac{1}{4}\right)^n + 3^{\frac{1}{n}}$

f $a_n = n! - (n-1)!$

$$A = 4 + 20 + 100 + 500 + 2.500 + 12.500 + 62.500 + 312.500 + 1.562.500 + 7.812.500 = 9.765.624$$

$$B = \frac{1}{6} + \frac{1}{24} + \frac{1}{60} + \frac{1}{120} + \dots + \frac{1}{1500} = \frac{65}{2400}$$

$$C = 1 + 4 + 12 + 32 + 80 + \dots + 5120 = 9288$$

$$E = 2 + 12 + 30 + 56 + \dots + 380 = 1250$$

$$F = 1 + 2 + 12 + 444 + \dots + 15.169 = 15.169$$

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Aplica las propiedades de la sumatoria para hallar el valor de cada suma si $a_n = 3n$, $b_n = \frac{n^2}{5}$ y $c_n = \frac{1}{n}$

a $\sum_{n=1}^7 \frac{2}{5} a_n$

b $\sum_{n=1}^5 (3a_n - b_n)$

c $\sum_{n=1}^{10} (c_n - 8b_n)$

d $\sum_{n=1}^7 (2a_n + 5b_n - c_n)$