



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 $2, 7, 12, 17, 22, 27, \dots$

c $\frac{5}{2}, \frac{11}{6}, \frac{7}{6}, \frac{1}{2}, -\frac{1}{6}, \dots$

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

b $10, 4, -2, -8, -14, \dots$

d $e^{-1}, e^{-2}, e^{-3}, e^{-4}, e^{-5}, \dots$

$a \quad d = 5 \quad a_n = a_1 + (n-1) \cdot 5$

$b \quad d = 6 \quad a_n = a_1 + (n-1) \cdot 6$

c No es

$d \quad d = 1 \quad a_n = a_1 + (n-1) \cdot 1$

e No es

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

a $a_n = 4 - n$

c $\{a_n = -n + 8\}$

e $a_n = \frac{1}{2 + \pi}$

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

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

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

Handwritten work for problem 2:

a $4 - 1 = 3$
 $4 - 2 = 2$
 $4 - 3 = 1$
 $4 - 4 = 0$
 $4 - 5 = -1$

b $\frac{2}{3} = 0,6$
 $\frac{1}{2} = 0,5$
 $\frac{2}{3} = 0,4$
 $\frac{1}{3} = 0,3$
 $\frac{2}{7} = 0,2$

c $-1 + 8 = 7$
 $-2 + 8 = 6$
 $-3 + 8 = 5$
 $-4 + 8 = 4$
 $-5 + 8 = 3$

d No

e No

f No

Pag 48

$$A \sum_{n=1}^6 \frac{1}{2n} = \frac{1}{2 \cdot 1} + \frac{1}{2 \cdot 2} + \frac{1}{2 \cdot 3} + \frac{1}{2 \cdot 4} + \frac{1}{2 \cdot 5} + \frac{1}{2 \cdot 6}$$

$$\left(\frac{1}{2} + \frac{1}{4} + \frac{1}{6} + \frac{1}{8} + \frac{1}{10} + \frac{1}{12} \right) = \frac{11}{12}$$

$$0,5 + 0,25 + 0,16 + 0,125 + 0,1 + 0,083 = 1,218$$

$$B \sum_{n=2}^{10} \frac{1}{n^2-1} = \frac{1}{2^2-1} + \frac{1}{3^2-1} + \frac{1}{4^2-1} + \frac{1}{5^2-1} + \frac{1}{6^2-1} + \frac{1}{7^2-1} +$$

$$+ \frac{1}{8^2-1} + \frac{1}{9^2-1} + \frac{1}{10^2-1}$$

$$\frac{1}{3} + \frac{1}{8} + \frac{1}{15} + \frac{1}{24} + \frac{1}{35} + \frac{1}{48} + \frac{1}{63} + \frac{1}{80} + \frac{1}{99} = \frac{36}{55}$$

$$C \sum_{n=1}^8 (+1)^{n+1} \cdot n^2 = 1^{1+1} \cdot 1^2 + 1^{2+1} \cdot 2^2 + 1^{3+1} \cdot 3^2 +$$

$$+ 1^{4+1} \cdot 4^2 + 1^{5+1} \cdot 5^2 + 1^{6+1} \cdot 6^2 + 1^{7+1} \cdot 7^2 + 1^{8+1} \cdot 8^2$$

$$1 \times 1 + 1 \times 2^2 + 1 \times 3^2 + 1 \times 4^2 + 1 \times 5^2 + 1 \times 6^2 + 1 \times 7^2 + 1 \times 8^2$$

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

$$\textcircled{1} \sum_{n=1}^5 3^n (n+1) = 3^1 (1+1) + 3^2 (2+1) + 3^3 (3+1) +$$

$$3^4 (4+1) + 3^5 (5+1)$$

$$= 1646$$

$$\sum_{n=1}^9 \frac{3n-1}{n} = \frac{3 \cdot 1 - 1}{1} + \frac{3 \cdot 2 - 1}{2} + \frac{3 \cdot 3 - 1}{3} +$$

$$+ \frac{3 \cdot 4 - 1}{4} + \frac{3 \cdot 5 - 1}{5} + \frac{3 \cdot 6 - 1}{6} + \frac{3 \cdot 7 - 1}{7} +$$

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

$$2 + \frac{6-1}{2} + \frac{9-1}{3} + \frac{12-1}{4} + \frac{15-1}{5} + \frac{18-1}{6} +$$

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

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

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

No PoDE

$$G \sum_{n=1}^{10} \left(\frac{1}{\sqrt{n}} - \frac{1}{\sqrt{n+1}} \right) = \left(\frac{1}{\sqrt{1}} - \frac{1}{\sqrt{1+1}} \right) + \left(\frac{1}{\sqrt{2}} - \frac{1}{\sqrt{2+1}} \right) +$$

$$+ \left(\frac{1}{\sqrt{3}} - \frac{1}{\sqrt{3+1}} \right) + \left(\frac{1}{\sqrt{4}} - \frac{1}{\sqrt{4+1}} \right) + \left(\frac{1}{\sqrt{5}} - \frac{1}{\sqrt{5+1}} \right) + \left(\frac{1}{\sqrt{6}} - \frac{1}{\sqrt{6+1}} \right) + \left(\frac{1}{\sqrt{7}} - \frac{1}{\sqrt{7+1}} \right) +$$

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

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

$$\left(\frac{1}{\sqrt{7}} - \frac{1}{2\sqrt{2}} \right) + \left(\frac{1}{2\sqrt{2}} - \frac{1}{3} \right) + \frac{1}{3} - \frac{1}{\sqrt{10}} + \frac{1}{\sqrt{10}} - \frac{1}{\sqrt{11}}$$

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

DD MM AA

$$H \sum_{n=1}^7 \left(1 + \frac{2}{n}\right) = \left(1 + \frac{2}{1}\right) + \left(1 + \frac{2}{2}\right) + \left(1 + \frac{2}{3}\right) + \left(1 + \frac{2}{4}\right) +$$
$$+ \left(1 + \frac{2}{5}\right) + \left(1 + \frac{2}{6}\right) + \left(1 + \frac{2}{7}\right)$$

$$= 3 + (1+1) + \frac{5}{3} + \frac{3}{2} + \frac{7}{5} + \frac{4}{3} + \frac{9}{7}$$

$$= 3 + 2 + \frac{5}{3} + \frac{3}{2} + \frac{7}{5} + \frac{4}{3} + \frac{9}{7}$$

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

$$= 853$$

$$70$$

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

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

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

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

$$A \quad 4 + 20 + 100 + 500 + 2500 + 12500 + 62500 + 312500 + 1562500 + 78125000 = 9.765.624$$

$$B \quad \frac{1}{8} + \frac{1}{24} + \frac{1}{60} + \frac{1}{120} + \dots + \frac{1}{1320} = \frac{65}{240}$$

$$C \quad 1 + 4 + 12 + 32 + 80 + \dots + 5720 = 9217$$

$$D \quad \frac{1}{4} + 3\frac{1}{3} + \frac{1}{16} + 3\frac{2}{5} + \dots +$$

$$E \quad 2 + 12 + 30 + 56 + \dots + 380 = 1430$$

$$F \quad 1 + 2 + 12 + 44 + \dots + 1376878944000 = 1331657196939$$