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1

a) $a_n = 5 \cdot n$

$a_1 = 5 \cdot 1 = 5 \quad a_3 = 5 \cdot 3 = 15 \quad a_5 = 5 \cdot 5 = 25$

$a_2 = 5 \cdot 2 = 10 \quad a_4 = 5 \cdot 4 = 20$

$a_n = (5, 10, 15, 20, 25)$

b) $a_n = (-1)^n (2n)$

$a_1 = (-1)^1 (2 \cdot 1) = 2 \quad a_2 = (-1)^2 (2 \cdot 2) = 4$

$a_3 = (-1)^3 (2 \cdot 3) = 6 \quad a_4 = (-1)^4 (2 \cdot 4) = 8$

$a_5 = (-1)^5 (2 \cdot 5) = 10$

$a_n = (2, 4, 6, 8, 10)$

c) $a_n = 2^n + n^2$

$a_1 = 2^1 + 1^2 = 5 \quad a_2 = 2^2 + 2^2 = 12 \quad a_3 = 2^3 + 3^2 = 31$

$a_4 = 2^4 + 4^2 = 68 \quad a_5 = 2^5 + 5^2 = 29$

$a_n = (5, 12, 31, 68, 29)$

d) $a_n = \frac{3n}{1+2n}$

$a_1 = \frac{3 \cdot 1}{1+2 \cdot 1} = \frac{3}{3} \quad a_2 = \frac{3 \cdot 2}{1+2 \cdot 2} = \frac{6}{5} \quad a_3 = \frac{3 \cdot 3}{1+2 \cdot 3} = \frac{9}{7}$

$a_4 = \frac{3 \cdot 4}{1+2 \cdot 4} = \frac{12}{9} \quad a_5 = \frac{3 \cdot 5}{1+2 \cdot 5} = \frac{15}{11}$

$a_n = \left(\frac{3}{3}, \frac{6}{5}, \frac{9}{7}, \frac{12}{9}, \frac{15}{11}\right)$

e) $a_n = -(-1)^n (5n - 3)$

$a_1 = -(-1)^1 (5 \cdot 1 - 3) = 2 \quad a_2 = -(-1)^2 (5 \cdot 2 - 3) = -7$

$a_3 = -(-1)^3 (5 \cdot 3 + 3) = 12 \quad a_4 = -(-1)^4 (5 \cdot 4 - 3) = -17$

$a_5 = -(-1)^5 (5 \cdot 5 - 3) = 22$

$a_n = (2, -7, 12, -17, 22)$

f) $a_n = n^n + n^2 + 2n + 1$

$a_1 = 1^1 + 1^2 + 2 \cdot 1 + 1 = 5 \quad a_2 = 2^2 + 2^2 + 2 \cdot 2 + 1 = 13$

$a_3 = 3^3 + 3^2 + 2 \cdot 3 + 1 = 43 \quad a_4 = 4^4 + 4^2 + 2 \cdot 4 + 1 = 281$

$a_5 = 5^5 + 5^2 + 2 \cdot 5 + 1 = 3141$

$a_n = (5, 13, 43, 281, 3141)$

g) $a_n = 4 + (-4)^n$

$a_1 = 4 + (-4)^1 = 0 \quad a_2 = 4 + (-4)^2 = 20 \quad a_3 = 4 (-4)^3 = 60$

$a_4 = 4 + (-4)^4 = 260 \quad a_5 = 4 + (-4)^5 = 1020$

$a_n = (0, 20, 60, 260, 1020)$

h) $a_n = 7 + \frac{1}{3^n}$

$a_1 = 7 + \frac{1}{3} = \frac{22}{3} \quad a_2 = 7 + \frac{1}{3^2} = \frac{64}{9} \quad a_3 = 7 + \frac{1}{3^3} = \frac{190}{27}$

$a_4 = 7 + \frac{1}{3^4} = \frac{568}{81} \quad a_5 = 7 + \frac{1}{3^5} = \frac{1702}{243}$

$a_n = \left(\frac{22}{3}, \frac{64}{9}, \frac{190}{27}, \frac{568}{81}, \frac{1702}{243}\right)$

2

Figura 1 Figura 2 Figura 3

$8 + 4 = 12 + 4 = 16$

$4n + 4$

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3

a) $a_1 = 3 \quad a_2 = 5 \quad a_3 = 7 \quad a_4 = 9$

b) $b_1 = 0.25$

$b_2 = 0.25 \cdot 4 = 1$

$b_3 = 1 \cdot 4 = 4$

$b_4 = 4 \cdot 4 = 16$

$b_5 = 16 \cdot 4 = 64$

$b_6 = 64 \cdot 4 = 256$

c) $c_1 = 2$

$c_2 = 2$

$c_3 = 2$

$c_4 = 2$

d) $a_1 = 0$

$a_2 = 1$

$a_3 = 2 \cdot 1 + 0 = 2$

$a_4 = 2 \cdot 2 + 1 = 5$

$a_5 = 2 \cdot 5 + 2 = 12$

4

a) $7 \cdot n \cdot 7$

$7 \cdot 1 \cdot 7 = 14$

$7 \cdot 2 \cdot 7 = 21$

b) $3 \cdot 2^{n-1}$

$3 \cdot 2^{1-1} = 3$

$3 \cdot 2^{2-1} = 6$

$3 \cdot 2^{3-1} = 12$

$3 \cdot 2^{4-1} = 24$

c) $C + C = C$

b) $n + 3$

$1 + 3 = 4$

$2 + 3 = 5$

$3 + 3 = 6$

$4 + 3 = 7$

c) $C + 6$

d) $(n+1)^2 - 1$

$(1+1)^2 - 1 = 3$

$(2+1)^2 - 1 = 8$

$(3+1)^2 - 1 = 15$

$(4+1)^2 - 1 = 24$

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7 Hijo 1 = x = 560.000

Hijo 2 = -40.000 = 560.000 - 40.000 = 520.000

Hijo 3 = -80.000 = 560.000 - 80.000 = 480.000

Hijo 4 = -120.000 = 560.000 - 120.000 = 440.000

$H1 + H2 + H3 + H4 = 2.000.000$

$x + (x - 40.000) + (x - 80.000) + (x + 120.000) = 2.000.000$

$4x - 240.000 = 2.000.000$

$4x = 2.240.000$

$\frac{2\,240\,000}{4} = 560.000$

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7

a) $a_n = a_1 \cdot r^{(n-1)}$

$n = 10$

$a_n = 0,75 \cdot (1,2)^{(10-1)}$

$a_n = 0,75 \cdot (1,2)^9$

$a_n = 3,87 m$

b)

$\frac{6}{\sqrt{2}} = 4,24$ $\quad \frac{4,24}{\sqrt{2}} = 2,99$ $\quad \frac{2,99}{\sqrt{2}} = 2,11$

$\frac{2,11}{\sqrt{2}} = 1,492$ $\quad \frac{1,492}{\sqrt{2}} = 1,055$ $\quad \frac{1,055}{\sqrt{2}} = 0,745$

$\frac{0,745}{\sqrt{2}} = 0,526$ $\quad \frac{0,526}{\sqrt{2}} = 0,371$ $\quad \frac{0,371}{\sqrt{2}} = 0,262$

$0,262 \times 4 = 1,048$