PRODUCTOS NOTABLES

⑧ Si:

$$a = \sqrt[3]{7+4\sqrt{3}} + \sqrt[3]{7-4\sqrt{3}}$$

$$b = \sqrt[3]{7+4\sqrt{3}} - \sqrt[3]{7-4\sqrt{3}}$$

$$a+b = 2\sqrt[3]{7+4\sqrt{3}}$$

$$a-b = 2\sqrt[3]{7-4\sqrt{3}}$$

$$a^2-b^2 = 4\sqrt[3]{(7+4\sqrt{3})(7-4\sqrt{3})}$$

$$\rightarrow 4\sqrt[3]{7^2-(4\sqrt{3})^2}$$

$$4\sqrt[3]{49-48}$$

$$\therefore\ 4(1) \Rightarrow \boxed{4}$$

$\overline{ojo}$

$$(a+b)^3 \quad \Big| \quad (a-b)^3$$

$$a^3 + 3a^2b + 3ab^2 + b^3 \quad \Big| \quad a^3 - 3a^2b + 3ab^2 - b^3$$

$$a^3 + 3a^2b + 3ab^2 + b^3$$

$$E = \frac{a^4(a^2-3b^2) + b^4(3a^2-b^2) + 3(a^2-b^2)}{4(a^2-b^2)}$$

$$\frac{(a^2)^3 - 3a^4b^2 + 3a^2b^4 - (b^2)^3 + 3(a^2-b^2)}{4(a^2-b^2)}$$

$$\frac{(a^2-b^2)^3}{4(a^2-b^2)} + 3(a^2-b^2)$$

$$\frac{(a^2-b^2)^2}{4} + 3(a^2-b^2)$$

$$\frac{4^2}{4} + 3(4)$$

$$4 + 12$$

$$\underline{16}$$

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⑤

$$x + \frac{1}{x}\left(\right.$$

$$x$$

$+3$ $\boxed{(a^2-b^2)}$

(a^2-b^2)

$+3(4)$

$4+12$

16

⑤ Si:

$$x^2-3x+1=0$$

$\dfrac{x\cdot1}{x}\left(\dfrac{1}{x}\left(x^2-3x+1=0\right)\right)$

$$x-3+\dfrac{1}{x}=0$$

$\boxed{x+\dfrac{1}{x}=③}$ $\boxed{x\cdot\dfrac{1}{x}=1}$

$x^2+\dfrac{1}{x^2}=3^2-2$

$x^3+\dfrac{1}{x^3}=3^3-3(3)$

$27-9\Rightarrow\boxed{18}$

Hallar:

$\left[x^x+\left(\dfrac{1}{x}\right)^{\frac{1}{x}}\right]\left[x^{\frac{1}{x}}+\left(\dfrac{1}{x}\right)^x\right]$

$x^{x+\frac{1}{x}}+x^x\cdot\dfrac{1}{x^x}+\dfrac{1}{x^{\frac{1}{x}}}\cdot x^{\frac{1}{x}}+\left(\dfrac{1}{x}\right)^{\frac{1}{x}+x}$

$x^{\boxed{x+\frac{1}{x}}}+1+1+\dfrac{1}{x^{\boxed{x+\frac{1}{x}}}}$

$x^3+\dfrac{1}{x^3}+2$

$18+2\Rightarrow\underline{20}$

⑩ Si:

$ax+by=⑧\rightarrow 8^2$

$ay-bx=⑥\rightarrow 6^2$ $\dfrac{100}{5}=20$

$a^2+b^2=5$

Calcule: x^2+y^2

Sol:

$(a^2+b^2)(x^2+y^2)=(ax+by)^2+(ay-bx)^2$

$5\cdot(x^2+y^2)=(8)^2+(6)^2$

$x^2+y^2=\dfrac{100}{5}=20$

$\dfrac{x+}{5}$
$\dfrac{}{2}$
No RAYA
II

③ $\sqrt[8]{1 + (2^8+1)(2^4+1)(2^2+1)\cdot\underset{(2^2-1)}{\overset{③}{3}}}$

$\xrightarrow{\times 2}$

$\sqrt[8]{2^{16}} \Rightarrow 2^2 \rightarrow 4$

④ Efectuar:

$\left(\underbrace{(\boxed{1+\sqrt{6}}) + \underline{\sqrt{5}} + \underline{\sqrt{2}}}_{3}\right)\left(\underbrace{(1+\sqrt{10}) - \underline{\sqrt{5}} - \underline{\sqrt{2}}}_{3}\right)$

$\left.(\sqrt{1}+\sqrt{6})\cdot(\sqrt{5}+\sqrt{2})\right\}\ \left(\sqrt{1+\sqrt{10}}\right)^2 - \left(\sqrt{5}+\sqrt{2}\right)^2$

$11 - 7$

4

4

⑥ d) $x^4 + x^2 y^2 + y^4$

$(x^2 + xy + y^2)(x^2 - xy + y^2)$

$\overset{⑧}{x} + x^4 + 1$

$(x^4 + x^2 + 1)(x^4 - x^2 + 1)$

$(x^2 + x + 1)(x^2 - x + 1)(x^4 - x^2 + 1)$

⑦ $\boxed{\dfrac{1}{x} + \dfrac{1}{y} = \dfrac{4}{x+y}}$

$\dfrac{y+x}{xy} = \dfrac{4}{x+y}\qquad \llcorner\ x=y$

$\boxed{(x+y)^2 = 4xy}$

$\llcorner\ x=y$

$x^2 + 2xy + y^2 = 4xy$

$x^2 - 2xy + y^2 = 0$

$(x-y)^2 = 0$

$\boxed{x=y}\ \checkmark$

⑨ S...

$E = \sqrt{}$

$(x+1)$

$\boxed{x^2 + x}$

22) Factorizar en R

$$P(x) = x^3 - x^2 - 5x + 5$$

$$x^2(x-1) - 5(x-1)$$

$$(x-1)(x^2-5)$$

$$(x-1)\cdot(x+\sqrt{5})\cdot(x-\sqrt{5})$$

$$-1 + \sqrt{5} - \sqrt{5}$$

$$-1$$

26) N° F.P. (Cuadráticos)

$$a^4 + b^4 - 7a^2b^2$$

$$a^4 + 2a^2b^2 + b^4 - 7a^2b^2 - 2a^2b^2$$

$$(a^2+b^2)^2 - 9a^2b^2$$

$$(a^2+b^2)^2 - (3ab)^2$$

$$(a^2+b^2+3ab)(a^2+b^2-3ab)$$

$$(a^2+3ab+b^2)(a^2-3ab+b^2)$$

$$2$$

27) Suma de coef. de un F.P

$$(x+3)^4 + 5x(x+6) + 39$$

$$((x+3)^2)^2 + 5(x^2+6x) + 39$$

$$(x^2+6x+9)^2 + 5(x^2+6x) + 39$$

$$(a+9)^2 + 5a + 39$$

$$a^2 + 18a + 81 + 5a + 39$$

$$a^2 + 23a + 120$$

$$a \qquad 15$$
$$a \qquad 8$$

$$(a+15)(a+8)$$

$$(x^2+6x+5)(x^2+6x+8)$$

$$\begin{array}{cc} x & 4 \\ x & 2 \end{array}$$

$$(x^2+6x+15)(x+4)(x+2)$$

$$1+6+15 \qquad \begin{array}{cc} 1+4 & 1+2 \\ & 3 \end{array}$$

$$22$$

⑪
$$\frac{4n+12}{n-8} \diagdown \frac{4n-3}{n-9}$$

$$\boxed{n=12}$$

$$\frac{60}{4} = \frac{45}{3} \Rightarrow ⑮ \not{\times}$$

⑬ $$\boxed{n=4}$$

$$\frac{X^{㉑} + Y^{㉟}}{X^{③} + Y^{⑤}}$$

$N^oT = 7$

$$T_3 = (x^3)^{\boxed{7-3}} (y^5)^{\boxed{3-1}}$$

$$X^{⑫} \cdot g^{⑩}$$

$G.A = 22 \longrightarrow$

⑮ $$X^{15} + X^{6} + X^{5} + 1$$

$$\frac{X^{⑳} - 1}{X^5 - 1} \not{\times}$$

⑯ $$X^{18} - X^{15} + X^{12} - X^{9} + X^{6} - X^{3} + 1$$

$$\frac{X^{㉑} + 1}{X^3 + 1}$$

FACTORIZACIÓN

㉕ Suma Fact. Primo 1ⁿ Grado.

$$(x+3)^4 - X^2 (x+6)^2 - 81$$

$$[(x+3)^2]^2 - (x^2+6x)^2 - 81$$

$$(x^2+6x+9)^2 - (x^2+6x)^2 - 81$$

$$(a+9)^2 - a^2 - 81$$

$$a^2 + 18a + 81 - a^2 - 81$$

$18a$ | $18(x+6)$

$18(x^2+6x)$ | $\dfrac{x \; ; \; x+6}{2x+6}$

Left edge fragments:

$-y)^2 = 4xy$

$)^4 = 8xy(x^3 + y^5)$

se_2) $K-1$

$y)^4$ $13-1$

$y)^4$ $⑫$

48

Bottom right: $C_5 = \langle -8, -7] \cup [8, 7 \rangle$

18 Simplificar:

$$G = \frac{x^{4n-1} + x^{4n-2} + x^{4n-3} + \cdots + x^2 + x + 1}{x^{2n-1} + x^{2n-2} + x^{2n-3} + \cdots + x^2 + x + 1}$$

$$\frac{\dfrac{x^{4n} - 1}{x - 1}}{\dfrac{x^{2n} - 1}{x - 1}} \Rightarrow \frac{x^{4n} - 1}{x^{2n} - 1}$$

$$\frac{(x^{2n} + 1)(x^{2n} - 1)}{(x^{2n} - 1)}$$

$$x^{2n} + 1$$

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20 V.N del T_c $(x=3)$ $(y = 2\sqrt{2})$

$$\frac{(x+y)^{100} - (x-y)^{100}}{8xy(x^2 + y^2)}$$

$$\frac{(x+y)^{100} - (x-y)^{100}}{(x+y)^4 - (x-y)^4}$$

Not = 25

$$t_c = T_{\frac{25+1}{2}} = T_{13}$$

$$\sqrt{8}$$

$$(x+y)^2 - (x-y)^2 = 4xy$$

$$(x+y)^4 - (x-y)^4 = 8xy(x^2 + y^2)$$

$$T_K = (base_1)^{Not-K}(base_2)^{K-1}$$

$$T_{13} = ((x+y)^4)^{25-13}((x-y)^4)^{13-1}$$

$$((x+y)^4)^{12}((x-y)^4)^{12}$$

$$(x+y)^{48}(x-y)^{48}$$

$$(x^2 - y^2)^{48}$$

$$(3^2 - \sqrt{8}^2)^{48} \Rightarrow 1$$

Column 1

9) Simplificar:

$$E = \sqrt{(x+1)(x-1)(x+2)(x+0)+1}$$

$$\underbrace{1 \qquad -1 \qquad 2 \qquad 0}_{+1}$$

$$(x+1)x \cdot (x-1)(x+2) + 1$$

$$(x^2+x)(x^2+x-2)+1$$

$$a(a-2)+1$$

$$a^2-2a+1$$

$$a \cancel{x} -1$$

$$a \cancel{x} -1$$

Column 2

$$\sqrt[2]{(a-1)^2}$$

$$a-1$$

$$\cancel{x^2+x-1}$$

$$\overset{0}{0}$$

$$(x+3)(x-5)(x-4)(x+4)$$

$$1^{ª} \quad 2^{b} \quad 3^{ª} \quad 4^{10}$$

Column 3

COCIENTES NOTABLES

14) Suma de todos los Expo.

$$Razón \to \frac{x^{100}-y^{100}}{x^4-y^4}$$

$$N°T = \frac{100}{4} = 25$$

$$\frac{96 \times 25}{2400}$$

$$\underset{96}{x} + \underset{92}{x} \cdot \underset{4}{y} + \underset{88}{x} \cdot y + \dots$$

17)

$$x^{91} \cdot y^{54} + T + x \cdot y^{63}$$

$$145 \qquad 145$$

$$145$$

) + 39

x) + 39

$^2 + 6x) + 39$

$(x^2 + 6x + 15)(x + 4)(x + 2)$

$1 + 6 + 15$

22

⑤

$1 + 2$

3

㉘

$6x^2 + 12xy + 6y^2 + 29y + 21x + 28$

$3x$

$2x$

$3y$

$2y$

④

⑦

$(3x + 3y + 4)(2x + 2y + 7)$

$5X + 5y + 11$

39

39

$+15)(a + 8)$

$-6x + 5)(x^2 + 6x + 8)$

x 4

x 2

㉚ Mayor Grado de un F.P. → $6n$

$x^{8n} + x^{4n} + x^{3n} + 2 =$

$1 + 1 =$

$(x^{8n} + x^{4n} + 1) + (x^{3n} + 1)$

$(x^{4n} + x^{2n} + 1)(x^{4n} - x^{2n} + 1) + (x^n + 1)(x^{2n} - x^n + 1)$

$(x^{2n} + x^n + 1)(x^{2n} - x^n + 1)(x^{4n} - x^{2n} + 1) + (x^n + 1)(x^{2n} - x^n + 1)$

$(x^{2n} - x^n + 1)\left[(x^{2n} + x^n + 1)(x^{4n} - x^{2n} + 1) + x^n + 1\right]$

$(x^{2n} - x^n + 1) \cdot (x^{6n} + \dots + x^n + 1)$

$D-K + K = 5$

$\dfrac{5}{2}$ $\dfrac{5}{2}$

No RAYAS

II

$Cs: \langle -8, -1] \cup [8, +\infty\rangle$