PARCIAL NRO ② CÁLCULO

HOJA 1

GIANLUCA CARLINI

STARPLAST®

1)

$$\underbrace{\begin{vmatrix} 2x-3 & 4 \\ -x+3 & 3 \end{vmatrix}}_{A} = \underbrace{\begin{vmatrix} -1 & 2 & 3 \\ -2 & 1 & -3 \\ 0 & 2 & 5 \end{vmatrix}}_{B}$$

$$A = \begin{vmatrix} 2x-3 & 4 \\ -x+3 & 3 \end{vmatrix} = 6x - 9 - 4(-x+3) = 6x - 9 + 4x - 12 = 10x - 21$$

$$B = \begin{vmatrix} -1 & 2 & 3 \\ -2 & 1 & -3 \\ 0 & 2 & 5 \end{vmatrix} = 2(-3)\cdot 0 + (+1)\cdot 1\cdot 5 + (-2)\cdot 2\cdot 3 - (-2)\cdot 2\cdot 5 - 0\cdot 1\cdot 3 - 2(-3)(+1)$$

$$0 - 5 + 12 + 20 - 0 - 6 = -3$$

$$A = B$$

$$10x - 21 = -3$$

$$10x = -3 + 21$$

$$x = \frac{+18}{+10} = \frac{9}{5}$$

$$\boxed{x = \frac{9}{5}} \qquad S = \left\{\frac{9}{5}\right\}$$

2) $(+3)\begin{vmatrix} -x+3 & 2+y \\ 3x-9 & +6-3y \end{vmatrix} + (-2)\begin{vmatrix} 4+4x & 1-3y \\ -8+8x & -2+6y \end{vmatrix} = (\$)\begin{vmatrix} -2 & 3 \\ -10 & 15 \end{vmatrix}$

$$\begin{vmatrix} -5x-17 & 3y-8 \end{vmatrix} = \begin{vmatrix} -10 & 15 \end{vmatrix}$$

$-5x - 17 = -10$ ^ $3y - 8 = 15$

$-5x = 7$ ^ $3y = 23$

$\boxed{x = \frac{7}{5}}$ $\boxed{y = \frac{23}{3}}$

3) $F(x) = \sqrt[6]{\underbrace{(3x-9)\cdot(4x+20)}_{\geq 0}}$

$= \sqrt[6]{12x^2 + 60x - 36x - 180}$

$= \sqrt[6]{12x^2 + 24x - 180}$ $\quad a = 12 \quad b = 24 \quad c = -180$

$= \dfrac{-24 \pm \sqrt{576 - 4 \cdot 12 \cdot (-180)}}{24}$

$= \dfrac{-24 \pm \sqrt{9216}}{24}$

$= \dfrac{-24 \pm 96}{24}$

$= \dfrac{-24 + 96}{24} = \dfrac{72}{24} = \boxed{3}$

$= \dfrac{-24 - 96}{24} = \boxed{-5}$

Dom(f) = $[3, +\infty)$

4) $\begin{cases} 5x - 2y = -1 \\ 2x + 3y = 11 \end{cases}$

$\Delta = \begin{vmatrix} 5 & -2 \\ 2 & 3 \end{vmatrix} = 15 + 4 = 19 \neq 0$

$\Delta(x) = \begin{vmatrix} -1 & -2 \\ 11 & 3 \end{vmatrix} = -3 + 22 = 19$

$\Delta(y) = \begin{vmatrix} 5 & -1 \\ 2 & 11 \end{vmatrix} = 55 + 2 = 57$

$x = \dfrac{19}{19}$ $\quad y = \dfrac{57}{19}$

$\boxed{x = 1}$ $\quad \boxed{y = 3}$

$S = \{(x = 1; y = 3)\}$

STARPLAST®

5) $2(3^x)^2 - 5(3^x) - 3 = 0$

$a = 2 \quad b = -5 \quad c = -3$

$3^x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4 \cdot 2 \cdot (-3)}}{4}$

$= \frac{5 \pm \sqrt{25 + 24}}{4}$

$= \frac{5 \pm 7}{4}$

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

$\frac{5-7}{4} = \frac{-2}{4} = -\frac{1}{2}$

$3^x = 3^1$ ∨ $3^x = -\frac{1}{2}$

$\nexists$

INYECTIVA

$\boxed{x = 1}$

$\boxed{S = \{1\}}$

6) $\text{Log}(3x+2) + \text{Log}(x+5) = \text{Log}(56)$

$\text{Log}[(3x+2)\cdot(x+5)] = \text{Log}(56)$

$3x^2 + 15x + 2x + 10 = 56$

$3x^2 + 17x - 46 = 0$

$a = 3 \quad b = 17 \quad c = -46$

$x = \frac{-17 \pm \sqrt{17^2 - 4 \cdot 3 \cdot (-46)}}{6}$

$x = \frac{-17 \pm \sqrt{289 + 552}}{6}$

$x = \frac{-17 \pm \sqrt{841}}{6}$

$x = \frac{-17+29}{6} = 2$

$x = \frac{-17-29}{6} = -\frac{46}{6} = -\frac{23}{3}$

$x = 2 \rightarrow \begin{cases} \text{ARG}_1 = 3 \cdot 2 + 2 = 8 > 0 \\ \text{ARG}_2 = 2 + 5 = 7 > 0 \end{cases}$

$\boxed{2 \in S}$

$x = -\frac{23}{3} \rightarrow \begin{cases} \text{ARG}_1 = 3\left(-\frac{23}{3}\right) + 2 = -21 \text{ NO CUMPLE} \\ \text{ARG}_2 = -\frac{23}{3} + 5 = -\frac{8}{3} \text{ NO CUMPLE} \end{cases}$

$\boxed{S = \{2\}}$

STARPLAST®