Universidad de San Buenaventura

Facultad ingeniería de sistemas

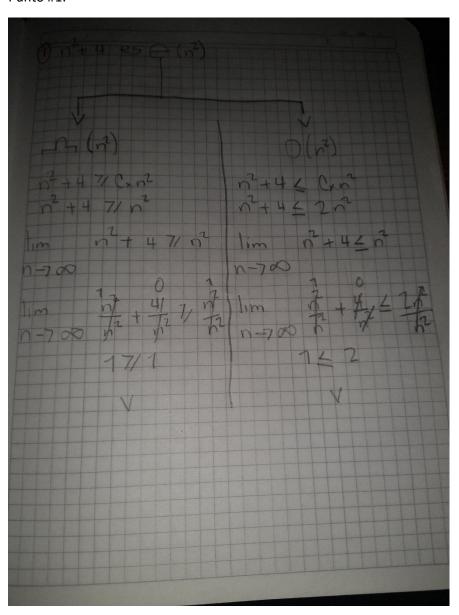


Taller 1 Corte 2 Análisis de algoritmos

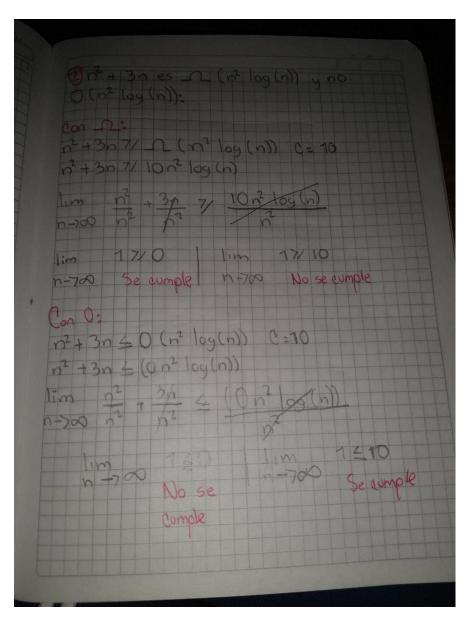
Presenta:

Juan Felipe Hurtado Villani Cristian Apraez Samuel Martínez

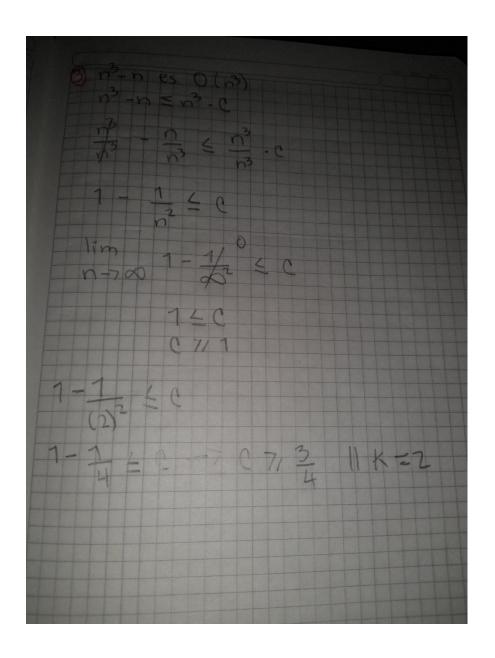
Punto #1:



Punto #2:



Punto #3:



Punto #4

$$f(n) = 1 \quad n$$

$$g(n) = 1 \quad n^{2}$$

$$f(n) = 0 \cdot (g(n)) \quad y \quad g(n) = 0 \cdot (f(n))$$

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Punto #5:

a)

a)
$$J(x) = O(g(x))$$
 entonces $g(x) = O(g(x))$
Sea $J(x) = X^2 + 2x + 1$
 $J(x) = X^2$
 $J(x) = X^2$

b)
$$f(x) = O(f(\frac{x}{2}))$$

Sea $g(x) = x^2 + 2x + 1$
 $f(\frac{x}{2}) = (\frac{x}{2})^2 + \frac{x}{2}(\frac{x}{2}) + 1 = (\frac{x}{2})^2 + x + 1$
 $x^2 + 2x + 1 \le (\frac{x}{2})^2 + x + 1$
 $x^2 + 2x + 1 \le \frac{x^2}{4} + x + 1$
 $x^2 + 2x + 1 \le \frac{x^2}{4} + x + 1$
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 $x^2 + 2x + 1 \le \frac{x^2}{4} + x + 1$
 $x = x^2 + 2x + 1 \le 0$
 $x = x^2 + 4x \le 0$
 $x = x^2 - 4x \le 0$
 $x = x^2 + 4x \le 0$

$$f(x) + O(f(x)) = O(f(x)) \qquad \text{Sea } C_{x} \ge 1$$

$$\text{Sea } f(x) = x^{2} \qquad \qquad x \ge \kappa$$

$$x^{2} + C_{x}x^{2} \neq x \ge x^{2}$$

$$x^{2} + C_{x}x^{2} \leq x^{2}$$

$$x^{2}$$

d)

e) f(n) = O(g(n)) impharmo que $g(n) = \Omega(f(n))$ $\Omega(f(x)) = K + f(x)$ Sea $f(x) = X^2 + 2x + 1$ $y = g(x) = X^2$ $X^2 + 2x + 1 \le C_X^2$ $X = X^2 + 2x + 1 \le C_X^2$