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$$= \frac{}{100K}$$

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$$\frac{1}{100^{10}} = \frac{1}{10^{20}}$$

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$\{ 1, \ldots, 100^{10} K \}$ $\binom{36}{6}$

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$$5 \cdot x_1^2 \cdot x_2^1 x_3^0 \longrightarrow 3 \qquad \leq \frac{K}{100K} = \frac{1}{100}$$

6

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$5 \cdot x_1^2 \cdot x_2^1 x_3^0 \rightarrow 3$

$\leq \frac{K}{100K} = \frac{1}{100}$

$(\frac{2}{3} \cdot x_1 + \frac{3}{4} x_2 + 7)(0 \cdot x_1 + 5x_2 - 3) + (\quad)(\quad)$

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$r(x) = p(x) - q(x)$

$$(x_1 + 1)(x_2 + 1) \dots \cdot (x_n + 1)$$

$x_1 \dots x_n$

$K = 1 + \max\{ \underbrace{r_1, \ldots, r_k}, s_1, \ldots, s_l \}$

$$\frac{1}{100^{10}} = \frac{1}{10^{20}}$$

$p(x)$ es equivalente a $q(x)$ $\longrightarrow$ sí ✓

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$\{x_1, \ldots, x_n\}$

$\underline{(x_1+1)(x_2+1) \cdots (x_n+1)}$

$x_1 \cdots x_n + \ldots + 1$

$K = 1 + \max\{\underbrace{r_1, \dots, r_k}, s_1, \dots, s_l\}$

$$\frac{1}{100^{10}} = \frac{1}{10^{20}}$$

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$r(x) = p(x) - q(x)$

$\underline{(X_1+1)(X_2+1)\dots\cdot(X_n+1)}$ $\{X_1, \dots, X_n\}$

$X_1 \cdots X_n + \dots + 1$

$$K = 1 + \max\{\underbrace{r_1, \dots, r_k}, s_1, \dots, s_l\}$$

$$\frac{1}{100^{10}} = \frac{1}{10^{20}}$$

$p(x)$ es equivalente a $q(x)$ $\longrightarrow$ sí ✓

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$r(x) = p(x) - q(x)$

$\{x_1, \dots, x_n\}$

$p(x_1, x_2) = x_1 - x_2$

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$\{x_1, \ldots, x_n\}$

$p(x_1, x_2) = x_1 - x_2$

$p(x_1, \ldots, x_n)$ $\quad Pr_{a_1,\ldots,a_n}\left(p(a_1,\ldots,a_n) = 0 \right) \leq \frac{k}{|A|}$

$\emptyset \neq A \subseteq Q$

$p(x_1, \ldots, x_n)$ $\qquad \Pr_{a_1, \ldots, a_n}\left(p(a_1, \ldots, a_n) = 0 \right) \leq \frac{k}{|A|}$

$\emptyset \neq A \subseteq Q$

$p(x_1, x_2) = (x_1 - 2)(x_3 - 4)$

x_2

$p(x_1, \ldots, x_n)$ $\quad Pr_{a_1, \ldots, a_n}\left(p(a_1, \ldots, a_n) = 0 \right) \leq \frac{k}{|A|}$

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$p(x_1, x_2) = (x_1 - 2)(x_2 - 4)$

$A = \{0, 1, -1\}$ $\quad \Rightarrow \quad \frac{}{3}$

$p(x_1, \ldots, x_n)$ $\Pr_{a_1, \ldots, a_n}\left(p(a_1, \ldots, a_n) = 0 \right) \leq \frac{k}{|A|}$

$\emptyset \neq A \subseteq Q$

$p(x_1, x_2) = (x_1 - 2)(x_2 - 4)$

$A = \{0, 1, -1\}$ $\Rightarrow$ $\frac{\quad}{\quad} \leq \frac{2}{3}$

$p(x_1, \ldots, x_n)$ $\quad \Pr_{a_1, \ldots, a_n}\left(p(a_1, \ldots, a_n) = 0 \right) \leq \frac{k}{|A|}$

$\emptyset \neq A \subseteq Q$

$p(x_1, x_2) = (x_1 - 2)(x_2 - 4)$ $\quad \Rightarrow \quad \frac{0}{9} \leq \frac{2}{3}$

$A = \{0, 1, -1\}$

(a_1, a_2)

$p(x_1, \dots, x_n)$ $\quad Pr_{a_1, \dots, a_n}(p(a_1, \dots, a_n) = 0) \leq \frac{k}{|A|}$

$\emptyset \neq A \subseteq Q$

$p(x_1, x_2) = (x_1 - 2)(x_2 - 4)$

$A = \{2\}$ $\quad \Rightarrow \quad \frac{0}{9} \leq \frac{2}{3}$

(a_1, a_2)

$p(x_1, \dots, x_n)$ $\Pr_{a_1,\dots,a_n}\left(p(a_1,\dots,a_n) = 0 \right) \leq \frac{k}{|A|}$

$\emptyset \neq A \subseteq Q$

$p(x_1, x_2) = (x_1 - 2)(x_2 - 4)$

$A = \{2, 3, 4\}$ $\Rightarrow$ $\frac{0}{9} \leq \frac{2}{1}$

(a_1, a_2)

$p(x_1, \ldots, x_n)$ $\Pr_{a_1, \ldots, a_n}\left(p(a_1, \ldots, a_n) = 0 \right) \leq \frac{k}{|A|}$

$\emptyset \neq A \subseteq Q$

$p(x_1, x_2) = (x_1 - 2)(x_2 - 4)$

$A = \{2, 3, 4\}$ $\Rightarrow$ $\frac{0}{9} \leq \frac{2}{3}$

(a_1, a_2)

$p(x_1, \dots, x_n)$ $\quad Pr_{a_1, \dots, a_n}\left(p(a_1, \dots, a_n) = 0 \right) \leq \frac{k}{|A|}$

$\emptyset \neq A \subseteq Q$

$p(x_1, x_2) = (x_1 - 2)(x_2 - 4)$

$A = \{2, 3, 4\}$ $\quad \Rightarrow \quad \frac{0}{9} \leq \frac{2}{3}$

(a_1, a_2) $\quad (2,2)$

$(2,3)$

$(2,4)$

$p(x_1, \ldots, x_n)$ $\quad Pr_{a_1,\ldots,a_n}(p(a_1,\ldots,a_n)=0) \leq \frac{k}{|A|}$

$\phi \neq A \subseteq Q$

$p(x_1,x_2) = (x_1-2)(x_2-4)$

$A = \{2,3,4\}$ $\Rightarrow$ $\frac{0}{9} \leq \frac{2}{3}$

(a_1,a_2)

(2,2) (2,4)
(2,3) (3,4)
(2,4) (4,4)

$p(x_1, \ldots, x_n)$ $\quad Pr_{a_1, \ldots, a_n}\left(p(a_1, \ldots, a_n) = 0 \right) \leq \frac{k}{|A|}$

$\phi \neq A \subseteq Q$

$p(x_1, x_2) = (x_1 - 2)(x_2 - 4)$

$A = \{2, 3, 4\}$ $\quad \Rightarrow \quad \frac{5}{9} \leq \frac{2}{3}$

(a_1, a_2)

$(2,2)$ $\cancel{(2,4)}$
$(2,3)$ $(3,4)$
$(2,4)$ $(4,4)$

$\underbrace{}_{5}$

$p(x_1, \ldots, x_n)$ $\quad Pr_{a_1,\ldots,a_n}\left(p(a_1,\ldots,a_n)=0\right) \leq \frac{k}{|A|}$

$\emptyset \neq A \subseteq Q$

$p(x_1,x_2) = (x_1-2)(x_2-4)$

$A = \{2,3,4\}$ $\quad \Rightarrow \quad \frac{5}{9} \leq \frac{2}{3}$

(a_1,a_2)

$(2,2)$ $\cancel{(2,4)}$
$(2,3)$ $(3,4)$
$(2,4)$ $(4,4)$

5

$p(x_1, \ldots, x_n)$ $\quad Pr_{a_1,\ldots,a_n}\left(p(a_1,\ldots,a_n)=0\right) \leq \frac{k}{|A|}$

$\emptyset \neq A \subseteq Q$

$p(x_1,x_2) = (x_1-2)(x_2-4)$

$\Rightarrow \quad \frac{5}{9} \leq \frac{2}{3}$

$A = \{2,3,4\}$

(a_1,a_2)

$$\underbrace{\begin{matrix} (2,2) & \cancel{(2,4)} \\ (2,3) & (3,4) \\ (2,4) & (4,4) \end{matrix}}_{5}$$

$p(x_1, \ldots, x_n)$ $\quad Pr_{a_1, \ldots, a_n}\left(p(a_1, \ldots, a_n) = 0\right) \leq \frac{k}{|A|}$

$\phi \neq A \subseteq Q$

$p(x_1, x_2) = (x_1 - 2)(x_2 - 4)$

$A = \{2, 3, 4\}$ $\Rightarrow$ $\frac{5}{9} \leq \frac{2}{3}$

(a_1, a_2)

$$\underbrace{\begin{matrix} (2,2) & \cancel{(2,4)} \\ (2,3) & (3,4) \\ (2,4) & (4,4) \end{matrix}}_{5}$$

$p(x_1, \ldots, x_n)$ $\quad Pr_{a_1,\ldots,a_n}(p(a_1,\ldots,a_n)=0) \leq \frac{k}{|A|}$

$\emptyset \neq A \subseteq Q$

$p(x_1, \ldots, x_n)$

$q(x_1, \ldots, x_n)$

$(2x_1 + 3x_2 + 4)(\frac{2}{3}x_1 - \frac{3}{4}x_2 + 5)$

$p(x_1, \ldots, x_n)$

$$\Pr_{a_1, \ldots, a_n}\left(p(a_1, \ldots, a_n) = 0\right) \leq \frac{k}{|A|}$$

$\emptyset \neq A \subseteq Q$

$K = 1 + \max\{r_1, \ldots, r_\ell, s_1, \ldots, s_m\}$

$p(x_1, \ldots, x_n)$

$A = \{1, \ldots, 100K\}$

$q(x_1, \ldots, x_n)$

?

$(2x_1 + 3x_2 + 4)\left(\frac{2}{3}x_1 - \frac{3}{4}x_2 + 8\right)$

$p(x_1, \ldots, x_n)$

$\emptyset \neq A \subseteq Q$

$p(x_1, \ldots, x_n)$

$q(x_1, \ldots, x_n)$

$$Pr_{a_1, \ldots, a_n}\left(p(a_1, \ldots, a_n) = 0 \right) \leq \frac{k}{|A|}$$

$K = 1 + \max\{r_1, \ldots, r_e, s_1, \ldots, s_m\}$

$A = \{1, \ldots, 100K\}$?

elegir $a_1, \ldots, a_n \in A$ de manera uniforme e independiente

if $p(a_1, \ldots, a_n) = q(a_1, \ldots, a_n)$ then return SI

else return NO

$p(x_1, \ldots, x_n)$

$\emptyset \neq A \subseteq Q$

$p(x_1, \ldots, x_n)$

$q(x_1, \ldots, x_n)$

$$Pr_{a_1, \ldots, a_n}\left(p(a_1, \ldots, a_n) = 0\right) \leq \frac{k}{|A|}$$

$K = 1 + \max\{r_1, \ldots, r_e, s_1, \ldots, s_m\}$

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if $p(a_1, \ldots, a_n) = q(a_1, \ldots, a_n)$ then return SI

else return NO

$p(x_1, \ldots, x_n)$

$\emptyset \neq A \subseteq \mathbb{Q}$

$p(x_1, \ldots, x_n)$
$q(x_1, \ldots, x_n)$ no son equivalentes

$r(x_1, \ldots, x_n) =$
$p(x_1, \ldots, x_n) -$
$q(x_1, \ldots, x_n)$

$$\underline{Pr_{a_1, \ldots, a_n}\left(p(a_1, \ldots, a_n) = 0 \right) \leq \frac{k}{|A|}}$$

$$Pr_{a_1, \ldots, a_n}\left(p(a_1, \ldots, a_n) = q(a_1, \ldots, a_n) \right) =$$

$$Pr_{a_1, \ldots, a_n}\left(r(a_1, \ldots, a_n) = 0 \right) \leq$$

$p(x_1, \ldots, x_n)$

$\emptyset \neq A \subseteq Q$

$p(x_1, \ldots, x_n)$
$q(x_1, \ldots, x_n)$ no son equivalentes

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$q(x_1, \ldots, x_n)$

$$\underline{\Pr_{a_1, \ldots, a_n}\left(p(a_1, \ldots, a_n) = 0 \right) \leq \frac{k}{|A|}}$$

$$\Pr_{a_1, \ldots, a_n}\left(p(a_1, \ldots, a_n) = q(a_1, \ldots, a_n) \right) =$$

$$\Pr_{a_1, \ldots, a_n}\left(r(a_1, \ldots, a_n) = 0 \right) \leq \frac{K}{|A|} = \frac{K}{100K} = \frac{1}{100}$$

$p(x_1,\ldots,x_n)$

$\emptyset \neq A \subseteq Q$

$p(x_1,\ldots,x_n)$
$q(x_1,\ldots,x_n)$ no son equivalentes

$r(x_1,\ldots,x_n) =$
$p(x_1,\ldots,x_n) -$
$q(x_1,\ldots,x_n)$

$$\Pr_{a_1,\ldots,a_n}\left(p(a_1,\ldots,a_n)=0\right) \leq \frac{k}{|A|}$$

$$\Pr_{a_1,\ldots,a_n}\left(p(a_1,\ldots,a_n) = q(a_1,\ldots,a_n)\right) = \Pr_{a_1,\ldots,a_n}\left(r(a_1,\ldots,a_n)=0\right) \leq \frac{K}{|A|} = \frac{K}{100K} = \frac{1}{100}$$

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$\emptyset \neq A \subseteq Q$

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$r(x_1,\ldots,x_n) =$
$p(x_1,\ldots,x_n) -$
$q(x_1,\ldots,x_n)$

$p(x_1, \ldots, x_n)$ $\qquad \Pr_{a_1,\ldots,a_n}(p(a_1,\ldots,a_n)=0) \leq \frac{k}{|A|}$

$\emptyset \neq A \subseteq Q$

$p(x_1,\ldots,x_n)$
$q(x_1,\ldots,x_n)$ no son equivalentes

$\Pr_{a_1,\ldots,a_n}(p(a_1,\ldots,a_n) = q(a_1,\ldots,a_n)) =$

$\Pr_{a_1,\ldots,a_n}(r(a_1,\ldots,a_n)=0) \leq \frac{K}{|A|} = \frac{K}{100K} = \frac{1}{100}$

$r(x_1,\ldots,x_n) =$
$p(x_1,\ldots,x_n) -$
$q(x_1,\ldots,x_n)$

$p(x_1, \ldots, x_n)$

$$\phi \neq A \subseteq Q$$

$$\frac{Pr_{a_1,\ldots,a_n}\left(p(a_1,\ldots,a_n)=0\right) \leq \frac{k}{|A|}}{}$$

$p(x_1,\ldots,x_n)$
$q(x_1,\ldots,x_n)$ no son equivalentes

$$Pr_{a_1,\ldots,a_n}\left(p(a_1,\ldots,a_n)=q(a_1,\ldots,a_n)\right) = Pr_{a_1,\ldots,a_n}\left(r(a_1,\ldots,a_n)=0\right) \leq \frac{K}{|A|} = \frac{K}{100K} = \frac{1}{100}$$

$$\underbrace{(3x_1+2x_2+7)\cdot(-3x_1+2x_2+8)\cdot(\quad)\cdot(\quad)}_{r_1} +$$

$$\underbrace{(\quad)(\quad)(\quad)(\quad)(r_n\quad)}_{r_2} + (\quad$$

$p(x_1,\dots,x_n)$

$$\Pr_{a_1,\dots,a_n}\left(p(a_1,\dots,a_n)=0\right) \le \frac{k}{|A|}$$

$\emptyset \neq A \subseteq Q$

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$$\Pr_{a_1,\dots,a_n}\left(p(a_1,\dots,a_n)=q(a_1,\dots,a_n)\right) = \Pr_{a_1,\dots,a_n}\left(r(a_1,\dots,a_n)=0\right) \le \frac{K}{|A|} = \frac{K}{100K} = \frac{1}{100}$$

$$\underbrace{(3x_1+2x_2+7)\cdot(-3x_1+2x_2+8)\cdot(\quad)(\quad)}_{r_1} +$$

$$\underbrace{(\quad)(\quad)(\quad)(\quad)(\quad)}_{r_2} + ($$

$p(x_1, \ldots, x_n)$

$\emptyset \neq A \subseteq \mathbb{Q}$

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$$\underbrace{(3x_1 + 2x_2 + 7) \cdot (-3x_1 + 2x_2 + 8) \cdot (\quad)(\quad)}_{r_1} +$$

$$\underbrace{(\quad)(\quad)(\quad)(\quad)(\quad)}_{r_2} + (

$p(x_1,\dots,x_n)$

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$$\underbrace{(\quad)(\quad)(\quad)(\quad)(r_n\quad)}_{r_2} + (

$p(x_1, \ldots, x_n)$

$\emptyset \neq A \subseteq Q$

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$p(x_1,\ldots,x_n)$
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$$\underbrace{(3x_1+2x_2+7)\cdot(-3x_1+2x_2+8)\cdot(\quad)\cdot(\quad)}_{r_1} +$$

$$\underbrace{(\quad)(\quad)(\quad)(\quad)(\quad)}_{r_2} + (

$p(x_1,\dots,x_n)$

$\emptyset \neq A \subseteq Q$

$p(x_1,\dots,x_n)$ no son

$q(x_1,\dots,x_n)$ equivalentes

$$\underline{Pr_{a_1,\dots,a_n}\left(p(a_1,\dots,a_n)=0\right) \leq \frac{k}{|A|}}$$

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$$Pr_{a_1,\dots,a_n}\left(r(a_1,\dots,a_n)=0\right) \leq \frac{K}{|A|} = \frac{K}{100K} = \frac{1}{100}$$

$$\underbrace{(3x_1+2x_2+7)\cdot(-3x_1+2x_2+8)\cdot(\quad)\cdot(\quad)}_{r_1} +$$

$$\underbrace{(\quad)(\quad)(\quad)(\quad)(r_{10}\quad)}_{r_2} + (

$p(x_1, \ldots, x_n)$

$\emptyset \neq A \subseteq \mathbb{Q}$

$$\Pr_{a_1,\ldots,a_n}\left(p(a_1,\ldots,a_n)=0\right) \leq \frac{k}{|A|}$$

$p(x_1, \ldots, x_n)$ no son
$q(x_1, \ldots, x_n)$ equivalentes

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$$\underbrace{(\quad)(\quad)(\quad)(\quad)(r_n\quad)}_{r_2} + (\ $$

$p(x_1, \ldots, x_n)$

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$$\underbrace{(3x_1 + 2x_2 + 7) \cdot (-3x_1 + 2x_2 + 8) \cdot (\quad) \cdot (\quad)}_{r_1} +$$

$$\underbrace{(\quad)(\quad)(\quad)(\quad)(r_n \quad)}_{r_2} + (