1

1

1

1

1

1

$(x+3)(2x+4)+\_\ \_\_\_$

$(x+3)(2x+4)+\_\ \_\_\_$

$$p(x) = \sum_{i=1}^{k} \prod_{j=1}^{l_i} (a_{i,j} \cdot x + b_{i,j})$$

$(x+3)(2x+4) + \_\ \_\_$

$$p(x) = \sum_{i=1}^{k} \prod_{j=1}^{l_i} (a_{i,j} \cdot x + b_{i,j})$$

$(x+3)(2x+4)+\_\ \_\_\_$

$$p(x) = \sum_{i=1}^{k} \prod_{j=1}^{l_i} (a_{i,j} \cdot x + b_{i,j})$$

$(x+3)(2x+4)+\_\ \_\_$

$$p(x) = \sum_{i=1}^{k} \prod_{j=1}^{l_i} (a_{i,j} \cdot x + b_{i,j})$$

$(x+3)(2x+4)+\_\ \_\_$

$$p(x)=\sum_{i=1}^{k}\prod_{j=1}^{l_i}(a_{i,j}\cdot x+b_{i,j})$$

$(x+3)(2x+4) + \ldots$

$\ell \leq \max\{\ell_1, \ldots, \ell_k\}$

$$p(x) = \sum_{i=1}^{k} \prod_{j=1}^{\ell_i} (a_{i,j} \cdot x + b_{i,j})$$

$(x+3)(2x+4)+\dots$

$\ell \leq \max\{\ell_1, \dots, \ell_k\}$

$$p(x) = \sum_{i=1}^{k} \prod_{j=1}^{\ell_i} (a_{i,j} \cdot x + b_{i,j})$$

$(x+3)(2x+4)+\_\ \_\_$

$l \leq \max\{l_1, \ldots, l_k\}$

$$p(x) = \sum_{i=1}^{k} \prod_{j=1}^{l_i} (a_{i,j} \cdot x + b_{i,j})$$

$(x+3)(2x+72)$

$(x+3)(2x+4)+\_\ \_\_$

$l \leq \max\{l_1, \ldots, l_k\}$

$$p(x) = \sum_{i=1}^{k} \prod_{j=1}^{l_i} (a_{i,j} \cdot x + b_{i,j})$$

$(x+3)(2x+72345)$

$(x+3)(2x+4) + \ldots$

$l \leq \max\{l_1, \ldots, l_k\}$

$$p(x) = \sum_{i=1}^{k} \prod_{j=1}^{l_i} (a_{i,j} \cdot x + b_{i,j})$$

$(x+3)(2x+72345)$

$(x+3)(2x+4)+\_\ \_\_\_$

$\ell \leq \max\{\ell_1, \ldots, \ell_k\}$

$$p(x) = \sum_{i=1}^{k} \prod_{j=1}^{\ell_i} (a_{i,j} \cdot x + b_{i,j})$$

$(x+3)(2x+72345)$

$(x+3)(2x+4)+ \_ \_\_\_$

$l \leq \max\{l_1, \dots, l_k\}$

$$p(x) = \sum_{i=1}^{k} \prod_{j=1}^{l_i} (a_{i,j} \cdot x + b_{i,j})$$

$(x+3)(2x+72345)$

$(x+3)(2x+4)+\_\ \_\_$

$$p(x) = \sum_{i=1}^{k} \prod_{j=1}^{l_i} (a_{i,j} \cdot x + b_{i,j})$$

$(x+3)(2x+72345)$

$l \leq \max\{l_1, \ldots, l_k\}$

$\Sigma = \{0, \ldots, 9, (,), +, -$

$(x+3)(2x+4)+\_\ \_\_$

$$p(x) = \sum_{i=1}^{k} \prod_{j=1}^{l_i} (a_{i,j} \cdot x + b_{i,j})$$

$(x+3)(2x+72345)$

$l \leq \max\{l_1, \ldots, l_k\}$

$\Sigma = \{0, \ldots, 9, (,), +, -, \wedge, x, *\}$

$(x+3)(2x+4)+\_\ \_\_$

$$p(x) = \sum_{i=1}^{k} \prod_{j=1}^{l_i} (a_{i,j} \cdot x + b_{i,j})$$

$(x+3)(2x+72345)$

$l \leq \max\{l_1, \ldots, l_k\}$

$\Sigma = \{0, \ldots, 9, (,), +, -, \hat{}, x, *\}$

$(x+3)(2x+4) + \_\_ \_\_\_$

$$p(x) = \sum_{i=1}^{k} \prod_{j=1}^{l_i} (a_{i,j} \cdot x + b_{i,j})$$

$(x+3)(2x+72345)$

$l \leq \max\{l_1, \ldots, l_k\}$

$\Sigma = \{0, \ldots, 9, (,), +, -, \wedge, x, *\}$

$(x+3)(2x+4) + \_ \_\_$

$$p(x) = \sum_{i=1}^{k} \prod_{j=1}^{l_i} (a_{i,j} \cdot x + b_{i,j})$$

234421733

$(x+3)(2x+4)+\_\ \_\_$

$$p(x)=\sum_{i=1}^{k}\prod_{j=1}^{l_i}(a_{i,j}\cdot x+b_{i,j})$$

234421733

$(x+3)(2x+4) + \_ \_\_\_$

$$p(x) = \sum_{i=1}^{k} \prod_{j=1}^{l_i} (a_{i,j} \cdot x + b_{i,j})$$

$n = 234421733$

$n-1$ $\quad O(n)$

$\text{longs} \approx \log_{10}(n)$ $\quad O(10^{\text{longs}})$

$n \approx 10^{\text{longs}}$

$(x+3)(2x+4) + \_ \_\_$

$$p(x) = \sum_{i=1}^{k} \prod_{j=1}^{l_i} (a_{i,j} \cdot x + b_{i,j})$$

$n = 234421733$

$n-1$ $\quad O(n)$

$\text{longs} \approx \log_{10}(n)$ $\quad O(10^{\text{longs}})$

$n \approx 10^{\text{longs}}$

$(x+3)(2x+4)+\ldots$

$$p(x)=\sum_{i=1}^{k}\prod_{j=1}^{l_i}\left(a_{i,j}\cdot x+b_{i,j}\right)$$

$n = 234421733$

$n-1$ $O(n)$

$\text{longs} \approx \log_{10}(n)$ $O(10^{\text{longs}})$

$n \approx 10^{\text{longs}}$

$(x+3)(2x+4) + \_ \_\_$

$$p(x) = \sum_{i=1}^{k} \prod_{j=1}^{l_i} (a_{i,j} \cdot x + b_{i,j})$$

$n = 234421733$

$n-1 \qquad O(n)$

$\text{longs} \approx \log_{10}(n) \qquad O(10^{\text{longs}})$

$()) $

$n \approx 10^{\text{longs}}$

$0 \cdot (\qquad)$

$(x+3)(2x+4) + \_ \_\_$

$$p(x) = \sum_{i=1}^{k} \prod_{j=1}^{l_i} (a_{i,j} \cdot x + b_{i,j})$$

$n = 234421733$

$n-1$ $\quad O(n)$

$\downarrow$

$\text{longs} \approx \log_{10}(n)$ $\quad O(10^{\text{longs}})$

$n \approx 10^{\text{longs}}$

$()$

$0 \cdot (\qquad)$

$(x+3)(2x+4)+ \_ \_\_$

$$p(x) = \sum_{i=1}^{k} \prod_{j=1}^{l_i} (a_{i,j} \cdot x + b_{i,j})$$

$n = 234421733$

$n-1$ $\quad O(n)$

$()$

$\log_{10} \approx \log_{10}(n)$ $\quad O(\log_{10})$

$n \approx 10^{\log_{10}}$

$0 \cdot (\quad)$

$(x+3)(2x+4)+\_\ \_\_$

$$p(x) = \sum_{i=1}^{k} \prod_{j=1}^{l_i} (a_{i,j} \cdot x + b_{i,j})$$

$n = 234421733$

$n-1$ $O(n)$

$\text{longs} \approx \log_{10}(n)$ $O(10^{\text{longs}})$

$n \approx 10^{\text{longs}}$

$(\,)\,)$

$O \cdot (\qquad\qquad)$

$(x+3)(2x+4)+\_\ \_\_$

$$p(x) = \sum_{i=1}^{k} \prod_{j=1}^{l_i} (a_{i,j} \cdot x + b_{i,j})$$

$x \cdot x \cdots x$

$(\quad)(\quad)(\quad)$

$(x+3)(2x+4)+\ldots$

$$p(x)=\sum_{i=1}^{k}\prod_{j=1}^{l_i}(a_{i,j}\cdot x+b_{i,j})$$

$4+6+8+\ldots\ldots+2(n-1)$

$=2\cdot(2+3+4+\ldots+(n-1))$

$x\cdot x\ldots x$

$(x+1)(x+2)(x+3)\ldots(\cdot\ )$

(x^2+2x+2)

$(x+3)(2x+4)+\ldots$

$$p(x)=\sum_{i=1}^{k}\prod_{j=1}^{l_i}(a_{i,j}\cdot x+b_{i,j})$$

$4+6+8+\ldots+2(n-1)$

$=2\cdot(2+3+4+\ldots+(n-1))$

$x\cdot x\ldots x$

$(x+1)(x+2)(x+3)\ldots(\cdot\ )$

(x^2+2x+2)

$(x+3)(2x+4)+\ldots$

$p(x) =$

$q(x)$

$p(a) = q(a)$

$4+6+8+\ldots\ldots+2(n-1)$

$= 2\cdot(2+3+4+\ldots+(n-1))$

$x \cdot x \cdots x$

$(x+3)(2x+4)+\_ \_\_\_$

$p(x) =$

$q(x)$

$p(a) = q(a)$

$p(x), q(x)$ son equivalents

$\checkmark$

$p(x), q(x)$ no son equivalents

Pr_a

$(x+3)(2x+4) + \_ \, \_\_\_$

$p(x) =$

$q(x)$

$p(a) = q(a)$

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

$p(x), q(x)$ son equivalents

✓

$p(x), q(x)$ no son equivalents

$\Pr_a \left(p(a) = q(a) \right)$

$(x+3)(2x+4) + \_ \_\_\_$

$p(x) =$

$q(x)$

$p(a) = q(a)$

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

$p(x), q(x)$ non equivalents

✓

$p(x), q(x)$ no non equivalents

$Pr_a\big(p(a) = q(a)\big)$

$(x+3)(2x+4)+$ ___

$p(x) =$

$q(x)$

$p(a) = q(a)$

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

$p(x), q(x)$ non equivalents ✓

$p(x), q(x)$ no non equivalents

$Pr_a\left(p(a) = q(a)\right)$

$(x+3)(2x+4)+\_ \; \_\_$

$p(x) =$

$q(x)$

$p(a) = q(a)$

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

$p(x), q(x)$ son equivalents

✓

$p(x), q(x)$ no son equivalents

$Pr_a\left(p(a) = q(a) \right)$

$(x+3)(2x+4)+\_\_\_$

$p(x) =$

$q(x)$

$p(a) = q(a)$

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

$p(x), q(x)$ non equivalents

✓

$p(x), q(x)$ no non equivalents

$$\Pr_a\left(p(a) = q(a)\right)$$

$(x+3)(2x+4)+\ldots$

$p(x) =$

$q(x)$

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

$p(a) = q(a)$

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

$p(x), q(x)$ son equivalents ✓

$p(x), q(x)$ no son equivalents

$Pr_a\left(p(a) = q(a)\right)$

$(x+3)(2x+4) + \_ \_\_\_$

$p(x) =$

$q(x)$

$\frac{1}{10^{10}}$

$p(a) = q(a)$

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

$p(x), q(x)$ non equivalents

✓

$p(x), q(x)$ no non equivalents

$Pr_a \left(p(a) = q(a) \right)$

$(x+3)(2x+4)+ \dots$

$p(x) =$

$\frac{1}{10^{10}}$

$q(x)$

$p(a) = q(a)$

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

$p(x), q(x)$ son equivalents ✓

$p(x), q(x)$ no son equivalents

$Pr_a\left(p(a) = q(a)\right)$

$(x+3)(2x+4)+\ldots$

$$2^n \left\{ \begin{array}{c|}
x_1 \ldots x_n \\
\hline
0 \ldots 0 \\
\vdots \\
1 \ldots 1
\end{array} \right.$$

$p(x), q(x)$ son equivalentes

$\checkmark$

$p(x), q(x)$ no son equivalentes

$$Pr_a\big(p(a)=q(a)\big)$$

$(x+3)(2x+4)+\ldots$

$$
2^n \left\{ \begin{array}{c|c}
x_1 \ldots x_n & \\
\hline
0 \ldots 0 & 0 \\
\vdots & \vdots \\
1 \ldots 1 & 0
\end{array} \right.
$$

$p(x), q(x)$ son equivalents ✓

$p(x), q(x)$ no son equivalents

$$Pr_a\left(p(a)=q(a)\right)$$

$(x+3)(2x+4)+ \ldots$

$$2^n \left\{ \begin{array}{c|c} x_1 \ldots x_n & \\ \hline 0 \ldots 0 & 0 \\ & \vdots \\ 1 \ldots 1 & 0 \end{array} \right.$$

2^{2^n}

$$\frac{1}{2^{2^n}}$$

$p(x), q(x)$ son equivalents ✓

$p(x), q(x)$ no son equivalents

$Pr_a\left(p(a)=q(a)\right)$

$(x+3)(2x+4) + \_\_\_$

$x_1 \ldots x_n$	
$0 \ldots 0$	$0 \to 2$
	$1 \to 2$
$\vdots$	
$1 \ldots 1$	0

2^n (rows)

$\hookrightarrow 2^{\#\text{filas}} = 2^{2^n}$

$p(x), q(x)$ son equivalentes ✓

$p(x), q(x)$ no son equivalentes

$$\Pr_a \big(p(a) = q(a) \big)$$

$(x+3)(2x+4)+\ldots$

$$2^n \left\{ \begin{array}{c|c} x_1 \ldots x_n & \\ \hline 0 \ldots 0 & 0 \to 2 \\ & 1 \to 2 \\ \vdots & \\ 1 \ldots 1 & 0 \end{array} \right.$$

$p(x), q(x)$ non equivalents ✓

$p(x), q(x)$ no son equivalents

$$\frac{1}{2^{2^n}}$$

$$Pr_a\left(p(a) = q(a)\right)$$

$\sqcup$

$\hookrightarrow 2^{\#\text{filas}} = 2^{2^n}$

$(x+3)(2x+4) + \_ \_\_\_$

$0,1$

$$2^n \left\{ \begin{array}{c|c} x_1 \cdots x_n & \\ \hline 0 \cdots 0 & 0 \to 2 \\ & 1 \to 2 \\ \vdots & \\ 1 \cdots 1 & 0 \end{array} \right.$$

1

$$\frac{1}{2^{2^n}}$$

$100K$

$\sqcup \to 2^{\#\text{filter}} =$

$\log(100K)$

$(x+3)(2x+4)+\_\ \_\_$

$0, 1$

$x_1 \ldots x_n$	
$0 \ldots 0$	$0 \to 2$
	$1 \to 2$
$\vdots$	
$1 \ldots 1$	0

2^n

$$\frac{1}{2^{2^n}}$$

1

0

$100K$

$\log(100K)$

$\hookrightarrow 2^{\#\text{fiktor}} =$

$(x+3)(2x+4) + \_\_ \_\_\_$

$x_1 \ldots x_n$	
$0 \ldots 0$	$0 \to 2$
	$1 \to 2$
$\vdots$	
$1 \ldots 1$	0

2^n

$\sqcup$

$\hookrightarrow 2^{\# \text{filas}} =$

$$\frac{1}{2^{2^n}}$$

$0, 1$

1

0

1

$100K$

$\log(100K)$

$(x+3)(2x+4) + \_ \_\_\_$

$$
2^n \left\{ \begin{array}{c|l}
x_1 \ldots x_n & \\
\hline
0 \ldots 0 & 0 \to 2 \\
 & 1 \to 2 \\
\vdots & \\
1 \ldots 1 & 0
\end{array} \right.
$$

$0, 1$

1

1

0

1

n

$100K$

$\log_2 n$

$\log(100K)$

$(x+3)(2x+4) + \_ \;\_\_\_$

$$2^n \left\{ \begin{array}{c|l} x_1 \ldots x_n & \\ \hline 0 \ldots 0 & 0 \to 2 \\ & 1 \to 2 \\ \vdots & \\ 1 \ldots 1 & 0 \end{array} \right.$$

1

n

$\log_2 n$

$0, 1$

1

$\_ \overset{0}{\curvearrowright}$

$\_ \overset{1}{\curvearrowright}$

$\_$

$100K$

$\log(100K)$

$(x+3)(2x+4) + \_ \;\_\_\_$

$x_1 \ldots x_n$	
$0 \ldots 0$	$0 \to 2$
	$1 \to 2$
$\vdots$	
$1 \ldots 1$	0

2^n

1

n

$\log_2 n$

$0, 1$

1

0

1

$100K$

$\log(100K)$

$(x+3)(2x+4)+\_\ \_\_$

$$\begin{array}{c|l} x_1 \ldots x_n & \\ \hline \end{array}$$

$$2^n \left\{ \begin{array}{c|l} 0 \ldots 0 & 0 \to 2 \\ & 1 \to 2 \\ & \\ 1 \ldots 1 & 0 \end{array}\right.$$

1

n

$\log_2 n$

$0, 1$

1

0

1

$100K$

$\log(100K)$

$(x+3)(2x+4) + \_ \; \_\_\_$

$$2^n \left\{ \begin{array}{c|l} x_1 \ldots x_n & \\ \hline 0 \ldots 0 & 0 \to 2 \\ & 1 \to 2 \\ \vdots & \\ 1 \ldots 1 & 0 \end{array} \right.$$

1

n

$\log_2 n$

$0, 1$

1

0

1

$100K$

$\log(100K)$

$(x+3)(2x+4) + \_\ \_\_$

	$x_1 \ldots x_n$	
2^n	$0 \ldots 0$	$0 \to 2$
		$1 \to 2$
	$1 \ldots 1$	0

1

n

$\log_2 n$

$0, 1$

1

0

1

$100K$

$\log(100K)$

$(x+3)(2x+4) + \_ \_\_$

$$2^n \left\{ \begin{array}{c|l} x_1 \ldots x_n & \\ \hline 0 \ldots 0 & 0 \to 2 \\ & 1 \to 2 \\ \vdots & \\ 1 \ldots 1 & 0 \end{array} \right.$$

1

n

$\log_2 n$

$0, 1$

1

0

1

$100K$

$\log(100K)$

$(x+3)(2x+4) + \_ \_\_\_$

$x_1 \ldots x_n$	
$0 \ldots 0$	$0 \to 2$
	$1 \to 2$
$\vdots$	
$1 \ldots 1$	0

2^n

1

n

$\log_2 n$

$0, 1$

1

0

1

$100K$

$\log(100K)$