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أسس الرياضيات

2004 – 2003

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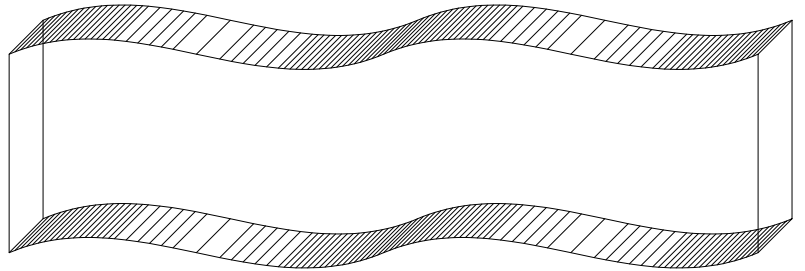
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(10) . (×) () :

$$\sum_{n=1}^{\infty} a_n \quad \sum_{n=1}^{\infty} |a_n| \quad .1$$

$$A \subseteq P(A) \quad A \quad P(A) \quad A \quad .2$$

$$2 \quad \left\{ (-1)^n \frac{2n+3}{n+1} \right\}_{n=1}^{\infty} \quad .3$$

$$() \quad .4$$

$$|a_n| \leq M \quad M \quad \{a_n\}_{n=1}^{\infty} \quad .5$$

$$(\exists x \in \mathbb{N})(\forall y \in \mathbb{N}^*)(y < x \Rightarrow \text{عدد أولي } y) \quad \mathbb{N}^* = \{2,3,4,5,6,\dots\} \quad .6$$

$$\cdot \quad \{(-1)^n a_n\}_{n=1}^{\infty} \quad \{a_n\}_{n=1}^{\infty} \quad .7$$

$$x, y \in \mathbb{Z} \quad \forall x \exists y, x + y > 1 \quad .8$$

$$A, B, C \quad B = C \quad A - B = A - C \quad .9$$

$$\sum_{n=1}^{\infty} \frac{1}{n^{1.001}} \quad .10$$

(01) : _____ :

$$\{ \quad - \quad - \quad - \quad \} : \quad \{a_n\}_{n=1}^{\infty} \quad \lim_{n \rightarrow \infty} a_n = 0 \quad .1$$

$$\{ \quad x \notin A \text{ or } x \in B \quad , \quad x \notin A \text{ and } x \notin B \quad , \quad x \in A \text{ and } x \notin B \} : \quad x \notin A - B \quad .2$$

$$: \quad (\mathbb{N}, \mathbb{R}) \quad \mathbb{R} = \{(x, y) : x \leq y\} \quad .3$$

$$\{ \quad - \quad - \quad \} \quad .4$$

$$\{ \quad - \quad - \quad - \quad \} : \quad \{5,6,7,8\} \quad \mathbb{R} = \{(x, y) : x \text{ يقسم } y\} \quad .4$$

$$\{ \quad - \quad - \quad - \quad \} : \quad \mathbb{Z} \quad \mathbb{Z} \quad .5$$

$$\{ \quad - \quad - \quad - \quad \} : \quad \mathbb{R}^{-1} \quad \mathbb{R} \quad .6$$

$$\{ \quad - \quad \} : \quad g \quad g \circ f \quad .7$$

$$\{ \dots \} : \dots .8$$

$$: \mathbb{R} \quad R = \{(x, y) : x \text{ تقبل القسمة على } y\} \quad .9$$

$$\{ \dots \} : \left\{ \frac{\pm 1}{\sqrt{n+1}} \right\}_{n=1}^{\infty} \quad 10$$

$$(10) : :$$

$$\inf A = \dots \quad \sup A = \dots \quad A = \{0.62, 0.6262, 0.626262, \dots\} \quad .1$$

$$\dots \sum_{n=1}^{\infty} a_n \quad \lim_{n \rightarrow \infty} a_n = 0 \quad .2$$

$$\text{Max } A = \dots, \quad \inf A = \dots : A = [-6, -2) \quad .3$$

$$: \mathbb{R} \quad R = \{(x, y) \in A \times A : x|y\} \quad A = \{5, 6, 7, 10, 15\} \quad .4$$

$$\dots A \quad \dots A$$

$$\dots A \quad R \quad .5$$

$$\dots \{a_n\}_{n=1}^{\infty} \quad \sum_{n=1}^{\infty} a_n \quad .6$$

$$\dots \sum_{n=1}^{\infty} \frac{5^n}{n!} x^n \quad .7$$

$$\dots (\dots) : \quad .8$$

$$\dots \left\{ \frac{\ln n}{n} \right\}_{n=1}^{\infty} \quad .9$$

$$\dots \frac{-5}{2} + \frac{-5}{2^2} + \frac{-5}{2^3} + \frac{-5}{2^4} + \dots \quad .10$$

$$(15) \quad (3) :$$

$$n \quad 9 \quad n^3 + (n+1)^3 + (n+2)^3 \quad ()$$

$$\sim (\sim P \rightarrow \sim Q) \equiv \sim P \wedge Q : \quad ()$$

$$\text{dom} (\cup R_i) = \cup (\text{dom } R_i) : \quad \{R_i\}_{i \in I} \quad ()$$

(15)

$$B \cap \left(\bigcup_{i \in I} A_i \right) = \bigcup_{i \in I} (B \cap A_i) :$$

$\leq 1p$

$$A \quad R \cap Q \quad : \quad A$$

$$(g \circ f)^{-1} = f^{-1} \circ g^{-1}$$

(3) :

$$\{A_i\}_{i \in I} \quad B \quad ()$$

$p \quad ()$

$$Q \quad R \quad ()$$

$$g: B \rightarrow C \quad f: A \rightarrow B \quad ()$$

(15)

(3):

:

$$a * b = \frac{a + b}{4}$$

$\forall a, b \in Q :$

(iv

(iii

* (ii

* (i

$$f(\bigcap A_i) \subseteq \bigcap f(A_i)$$

X

$\{A_i\}_{i \in I}$

$f : X \rightarrow Y$

$$f(\bigcap A_i) \neq \bigcap f(A_i)$$