

江苏省仪征中学 2021—2022 学年度第一学期午间练 8

学校: _____ 姓名: _____ 班级: _____ 考号: _____

一、单选题 (本大题共 2 小题, 共 10.0 分)

1. 设集合 $U = \{1, 2, 3, 4, 5\}$, $A = \{1, 2, 3\}$, $B = \{2, 3, 4\}$, 则 $C_U(A \cap B) = (\quad)$
A. $\{1, 4, 5\}$ B. $\{2, 3\}$ C. $\{4, 5\}$ D. $\{1, 5\}$
2. 已知 $2^x = 3^y = k$, 且 $\frac{1}{x} + \frac{1}{y} = 1$, 则 k 的值为 $(\quad)$
A. 6 B. $\sqrt{6}$ C. 2 D. 3

二、多选题 (本大题共 1 小题, 共 5.0 分)

3. 下列各式其中正确的有 $(\quad)$
A. $\lg(\lg 10) = 0$; B. $\lg(\ln e) = 0$;
C. 若 $10 = \lg x$, 则 $x = 10$; D. 若 $\log_{25} x = \frac{1}{2}$, 则 $x = \pm 5$.

三、单空题 (本大题共 2 小题, 共 10.0 分)

4. 已知 $4^a = 9^b = k$, 且 $\frac{1}{a} + \frac{1}{b} = 2$, 则 k 的值为 _____.
5. 命题: “ $\exists x_0 \in R, x_0 \leq 1$ 或 $x_0^2 > 4$ ” 的否定是 _____.

四、解答题 (本大题共 1 小题, 共 12.0 分)

6. 求下列实数 x 的值:

(1) $\log_x 49 = \frac{2}{3}$.

(2) $\log_{\frac{4}{9}} \frac{3}{2} = x$.

答案和解析

1. 【答案】A

解: $\because A = \{1, 2, 3\}, B = \{2, 3, 4\},$

$$\therefore A \cap B = \{2, 3\},$$

$$\text{则 } C_U(A \cap B) = \{1, 4, 5\},$$

2. 【答案】A

解: $2^x = 3^y = k$, 则 $x = \log_2 k, y = \log_3 k$,

$$\text{则 } \frac{1}{x} + \frac{1}{y} = \log_k 2 + \log_k 3 = \log_k 6 = 1,$$

$$\therefore k = 6,$$

3. 【答案】AB

解: 对于 A, $\because \lg(\lg 10) = \lg 1 = 0$, $\therefore A$ 对; 对于 B, $\because \lg(\ln e) = \lg 1 = 0$, $\therefore B$ 对;

对于 C, $\because 10 = \lg x$, $\therefore x = 10^{10}$, C 错; 对于 D, $\because \log_{25} x = \frac{1}{2}$, $\therefore x = 25^{\frac{1}{2}} = 5$, D 错.

4. 【答案】6

解: $4^a = 9^b = k > 0$, $\therefore a = \log_4 k, b = \log_9 k$, $\therefore \frac{1}{a} = \log_k 4, \frac{1}{b} = \log_k 9$,

$$\therefore \frac{1}{a} + \frac{1}{b} = \log_k 4 + \log_k 9 = \log_k 36 = 2, \therefore k^2 = 36, k > 0, \therefore k = 6.$$

5. 【答案】 $\forall x \in R, x > 1$ 且 $x^2 \leq 4$

解: 因为存在量词命题的否定是全称量词命题,

所以命题: “ $\exists x_0 \in R, x_0 \leq 1$ 或 $x_0^2 > 4$ ” 的否定是: $\forall x \in R, x > 1$ 且 $x^2 \leq 4$.

6. 【答案】解: (1) $\because \log_x 49 = \frac{2}{3}, \therefore x^{\frac{2}{3}} = 7^2, \therefore x = (7^2)^{\frac{3}{2}} = 7^3 = 343$.

$$(2) \because \log_{\frac{4}{9}} \frac{3}{2} = x, \therefore x = \log_{\frac{4}{9}} \left(\frac{4}{9}\right)^{-\frac{1}{2}} = -\frac{1}{2}.$$