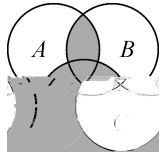


第二十四届 希望杯 全国数学邀请赛

高一 第2 试试题

一 选择题(4 , 40 .)

1. $\frac{1}{2} + \frac{1}{3} = \frac{5}{6}$ ()
 (A) $(A \cap C) \cap (B \cap C)$. (B) $(A \cap B) \cap (A \cap C)$.
 (C) $(A \cap B) \cap (B \cap C)$. (D) $(A \cap B) \cap C$.



2. $10^3 + 10^2 + 10 + 1 = 1111$ ()
 (A) 3. (B) 40. (C) 240. (D) 1000.

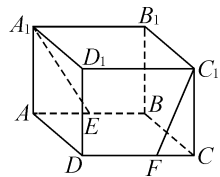
3. $\triangle ABC$, $\tan A = 2, \tan B = 3$, $\sin C =$ ()
 (A) $\frac{1}{6}$. (B) $\frac{1}{4}$. (C) $\frac{1}{3}$. (D) $\frac{3}{4}$.

4. $y = \left(\frac{1}{2}\right)^{\sqrt{-x^2+x+2}}$ ()
 (A) $\left[-1, \frac{1}{2}\right]$. (B) $\left(-\infty, -\frac{1}{2}\right]$. (C) $\left[\frac{1}{2}, +\infty\right)$. (D) $\left[\frac{1}{2}, 2\right]$.

5. $M = \left\{x \mid \frac{720}{x} \in \mathbf{N}, x \in \mathbf{N}\right\}$ ()
 (A) 15. (B) 21. (C) 23. (D) 27.

6. $\cos \alpha + \sin \alpha + 3\cos \alpha + 1 = 0$, $\tan \alpha =$ ()
 (A) $\frac{3}{4}$. (B) $\frac{4}{3}$. (C) $-\frac{3}{4}$. (D) $-\frac{4}{3}$.

7. $ABCD - A_1B_1C_1D_1$, E on AB , F on CD , $DF : FC = 2 : 1$, $A_1E \parallel C_1F$ ()
 (A) $\frac{4\sqrt{3}}{3}$. (B) $\sqrt{3}$. (C) 2. (D) $\sqrt{5}$.



8. Given provision $f_n(x) = \underbrace{f \dots f}_{n \text{ times}}(f(x))$, n is a positive integer.

If $f(x) = \begin{cases} 2(1-x), & 0 \leq x < 1, \\ x-1, & 1 < x < 2, \end{cases}$ then the value of $f_{2013}\left(\frac{4}{5}\right)$ is ()

- (A) $\frac{2}{5}$. (B) $\frac{6}{5}$. (C) $\frac{1}{5}$. (D) $\frac{8}{5}$.

9. $f(x) = x^3 + 3x + q$, $a + b > 0, b + c > 0, c + a > 0$. $p = f(a) + f(b) + f(c)$, ()

- (A) $p > q$. (B) $p < q$. (C) $p > 3q$. (D) $p < 3q$.

10. $\{a_n\}$, $a_1 + a_2 + a_3 = 1$, $q < 0$, $t = a_1 a_2 a_3$, t

- ()
 (A) $(-\infty, -1]$. (B) $(0, 1]$. (C) $[-1, +\infty)$. (D) $[-1, 0]$.

二 填空题(4 , 40 .)

