Children's Day maths puzzle challenge for CBSE Class 9 and 10: Class 12: answers

CBSE Math Revision · CBSE Class 12 (no calculator) · 14 November · Teacher answers and notes

No calculator. Every answer works out exactly.

Teacher notes

- For CBSE Class 12. No calculator: every answer works out exactly.

Starter

1. **1**
   - $[x^3]$ from 0 to 1 = 1
2. **1**
   - $(1 + x)e^x = 1$ at $x = 0$
3. **2**
   - $1 - i^2 = 2$
4. **35**
   - $7 \times 6 \times 5 \div 6 = 35$

Task A: Round 1: calculus

a. **4/3**
- They meet at $x = 0$ and 2.
- $\int_0^2 (2x - x^2)\,dx = 4 - 8/3 = 4/3$

b. **25 m²**
- Sides x and $10 - x$: area $x(10 - x)$.
- The derivative $10 - 2x = 0$ at $x = 5$: area 25

c. **6**
- $y = 3e^x$
- $3e^{\ln 2} = 6$

Task B: Round 2: chance and vectors

a. **2/3**
- 1/2 + 1/3 − 1/6 = 2/3

b. **2/15**
- 4/10 × 3/9 = 12/90 = 2/15

c. **$\mathbf{a} \cdot \mathbf{b} = 0$, so the angle is 90°**
- 2 + 2 − 4 = 0

d. **9**
- $\mathbf{a} \times \mathbf{b} = -6\mathbf{i} + 6\mathbf{j} - 3\mathbf{k}$
- $\sqrt{(36 + 36 + 9)} = 9$

Extension

1. **5**
   - $2 \times 4 - 1 \times 3 = 5$

Every question is original and every answer was checked before publishing.