

私学適性平成28年度解答

W-数学研究会

2月19日

1 小問集合

(1) $-2\sqrt{2} < m < 2\sqrt{2}$

(2) $(x^2 + 4xy + 8y^2)(x^2 - 4xy + 8y^2)$

(3) 42

(4) 37 個

(5) 66 個

(6) -2

(7) $\frac{2a + 2b}{6a + 3b}$

(8) $|\vec{a} - \vec{b}| = \sqrt{5}$

(9) $\frac{1}{5}$

(10) 4π

2 小問集合

(1) $m < -2$

(2) $AD = 2\sqrt{6}$

(3) 11

(4) $y = \frac{3}{4}x + \frac{5}{2}, x = 2$

(5) $-\frac{1}{2}(t-1)^2$

(6) $\frac{27}{4}$

(7) $\frac{1}{2}n(n+1)(n+2)$

(8) $a_n = 9^{\frac{1}{2}(3^n-1)}$

(9) $\pi^2 - 4$

(10) $a = \pm 3$

(11) $\alpha + \beta = \frac{\pi}{6}$

3 確率

(1) $\frac{105}{512}$

(2) $\frac{35}{432}$

(3) $\frac{1}{128}$

4 微分

(1)(ア) 極大値: $\frac{7}{e^2}$ ($x = 2$)

極小値: $-3e^3$ ($x = -3$)

(イ) $x = \frac{1 \pm \sqrt{29}}{2}$

(2) $0 < k < \frac{7}{e^2}$

5 空間ベクトル

(1) $V = \frac{\alpha^2\beta}{6}$

(2) $S = \frac{\alpha\sqrt{\alpha^2 + 2\beta^2}}{2}$

(3) $d = \frac{\alpha\beta}{\sqrt{\alpha^2 + 2\beta^2}}$

(4) $\vec{n} = \left(\frac{\beta}{\sqrt{\alpha^2 + 2\beta^2}}, \frac{\beta}{\sqrt{\alpha^2 + 2\beta^2}}, \frac{\alpha}{\sqrt{\alpha^2 + 2\beta^2}} \right)$