

数学（理系） 解答例

1	問 1	(1)	$x^2 + y^2 + 6x - 4y + 8 = 0$	(2)	$m = \frac{-5 \pm \sqrt{30}}{10}$	(3)	$\frac{23}{4} < n < 11 - \sqrt{5}$	
	問 2	(1)	$R = \frac{27\sqrt{2}}{8}$	(2)	$BD = \frac{3\sqrt{3}}{2}$	(3)	$40 : 81$	(4)

2	問 1	$(x - a)^3 + a$	問 2	$0 < a < 2$
	問 3	$S = \frac{\sqrt{3}}{18} a \sqrt{(4 - a^2)^3}$	問 4	$a = 1$ のとき最大値 $S = \frac{1}{2}$

3	問 1	2	問 2	$2\sqrt{2}$
	問 3	$\left(1, -\frac{\sqrt{3}}{3}, \pm \frac{2\sqrt{6}}{3}\right), \left(0, \frac{2\sqrt{3}}{3}, \pm \frac{2\sqrt{6}}{3}\right), \left(2, \frac{2\sqrt{3}}{3}, \pm \frac{2\sqrt{6}}{3}\right)$		

4	問 1	(1)	$\frac{dx}{dt} = \frac{\sqrt{3}}{4} \left(1 + \frac{1}{t^2}\right)$	(2)	$t = 1, t = \sqrt{3}$	(3)	$\frac{1}{4} + \frac{3}{16} \log 3$
	a 問 2	$AP_k = \sqrt{\left(\frac{k}{n}\right)^2 - \frac{k}{n}} + 1$			問 3	$\frac{1}{2} + \frac{3}{8} \log 3$	