

[I]

(1) $f(x)=a(x^2-2x/a)+1/a+b$
 $f(x)=a(x-1/a)^2+1/a+b-1/a$
 $f(x)=a(x-1/a)^2+b$
 $b=2a, 1/a=b$
 $a=\sqrt{1/2}$
 $b=\sqrt{2}$

答え(a,b)=($\sqrt{1/2}$, $\sqrt{2}$)

(2) (i) $1/a \leq 0$
 $a > 0$ より不適
(ii) $0 \leq 1/a \leq 1/2 \rightarrow 2 \leq a$
 $f(1/a)=2 \wedge f(1)=7/2$
 $f(1/a)=b \quad f(1)=a+1/a+b-2$
 $2=b, a+1/a=7/2$
 $a^2-7a/2+1=0$
 $a=((7/2) \pm \sqrt{(49/4-4)})/2$
 $a=((7/2) \pm \sqrt{(33/4)})/2$
 $a \geq 2$ より
 $a=((7/2) + \sqrt{(33/4)})/2$

(iii) $1/2 \leq 1/a \leq 1 \rightarrow 1 \leq a \leq 2$
 $f(1/a)=2 \wedge f(0)=7/2$
 $2=b, f(0)=1/a+b$
 $1/a+2=7/2$
 $a=2/3$
 不適
(iv) $1 \leq 1/a \rightarrow a \leq 1$
 $f(0)=7/2 \wedge f(1)=2$
 $1/a+b=7/2, 1/a+b+a-2=2$
 $b=7/2-1/a, b=4-1/a-a$
 $7/2-1/a=4-1/a-a$
 $-1/2=a$
 不適

答え(a,b)=($(7 + \sqrt{33})/4, 2$)

[II]

(1) i-iii iii-1 ii-iv iv-ii

i-iii, iii-1 $\rightarrow$ 4通り

ii-iv iv-ii $\rightarrow$ 4通り

$$8/36 = 2/9$$

答え $2/9$

(ii) (i,i,iv,iv)の並び替え $\rightarrow 4C2 = 6$

$$6 \cdot 4 / (6 \cdot 6 \cdot 6 \cdot 6) = 1/54$$

答え $1/54$

(iii) (i-i-iii)(i-ii-iv)の並び替え $\rightarrow 3, 6$

$$3 \cdot 4 / (6 \cdot 6 \cdot 6) + 4 \cdot 6 / (6 \cdot 6 \cdot 6)$$

$$= 1/6$$

答え $1/6$

[法学部Ⅲ]および[文学部Ⅲ]

(1) 対称性より $b>0$ とする

$$B(1,b)$$

$$b^2+1^2=(1+r)^2 \wedge b+r=3$$

$$b^2+1=(4-b)^2$$

$$1=16-8b \rightarrow b=15/8$$

$$\text{答え } r=9/8$$

(2) 対称性より $d>0$

$$B(c,d)$$

$$c^2+d^2=25/9$$

$$(c-1)^2+d^2=49/9$$

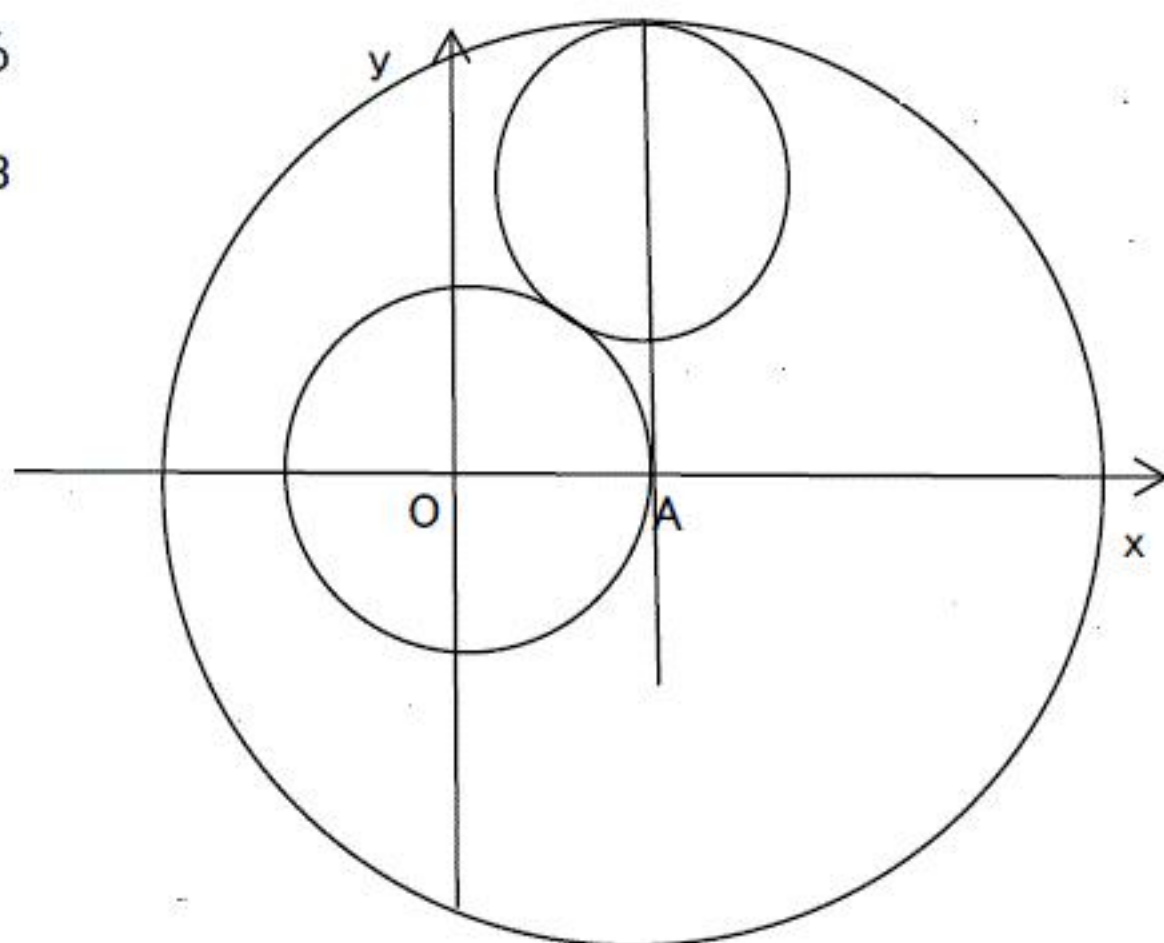
$$2c-1=-24/9$$

$$c=-5/6$$

$$d=5\sqrt{3}/6$$

$$\text{面積は } 1 \times 5\sqrt{3}/6 / 2$$

$$\text{答え、 } 5\sqrt{3}/12$$



(3)

$$B(e,f)$$

$$e^2+f^2=(1+r)^2$$

$$(e-1)^2+f^2=(3-r)^2$$

$$2e-1=8r-8$$

$$e=4r-7/2$$

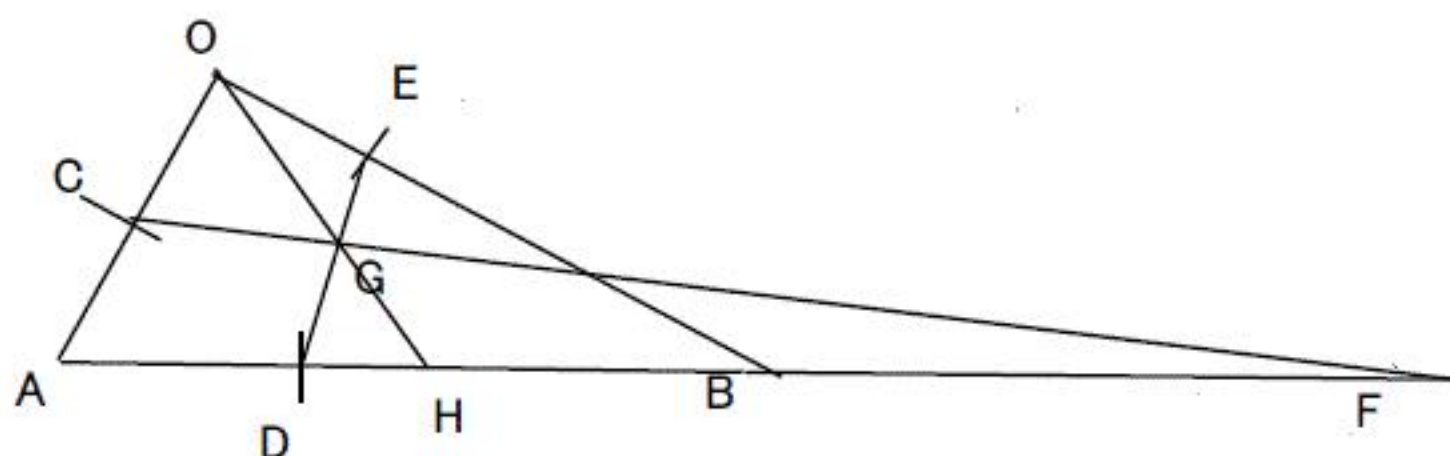
$$f^2=(1+r)^2-(4r-7/2)^2$$

$$f^2=-15r^2-30r-41/4$$

$$=-15(r-1)^2+19/4$$

$$\text{答え } (e,f)=(1/2, \sqrt{19}/2)$$

[経営学部Ⅲ]



$$(1) \quad OC=1/2OA$$

$$OF=OA+2AB=2OB-OA$$

$$OE=1/4OB$$

$$OD=2/3OA+1/3OB$$

$$OG=kOC+(1-k)OF=mOD+(1-m)OE$$

$$k/2OA+(1-k)(2OB-OA)=2m/3OA+m/3OB+(1-m)/4OB$$

$$(3k/2-1)OA+(2-2k)OB=2m/3OA+(1/4+m/12)OB$$

$$3k/2-1=2m/3 \quad 2-2k=1/4+m/12$$

$$k=6/7$$

$$\text{答え } OG=2/7OA+2/7OB$$

$$(2) \quad OH=nOG \quad n=7/4$$

$$OH=1/2OA+1/2OB$$

$$7/2 \angle OCG = \angle OAH$$

$$2 \angle OAH = \angle OAB$$

$$\text{答え } 1/7$$