R4 本試

1

(1) $5.2^2-4.8^2=27.04-23.04$

$=\underline{4}$

(2) $\begin{cases}5x+6y=-2 & \text{①}\\ -4x+3y=25 & \text{②}\end{cases}$

②×2

$5x+6y=-2$

$-)\ -8x+6y=50$

$13x=-52$

$x=-4$

$x=-4$ を②に代入

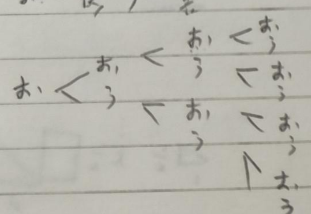
$16+3y=25$

$3y=9$

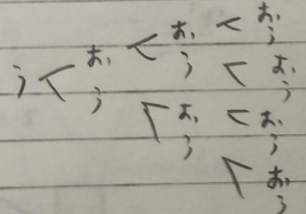
$y=3$

$\underline{x=-4,\ y=3}$

(3) お－表 う－裏



$\frac{8}{8}$



$\frac{7}{8}$

$8+7=15$ $\quad\underline{\frac{15}{16}}$

$8+8=16$

(4) データを値の大きさの順に並べると

2, 2, 2, 2, 2, 4, 4, 7, 7, 10

$10\div2=5\rightarrow$ 中央値は5番目と6番目の間より $\frac{2+4}{2}=\underline{3}$

$10\div4=2.5\rightarrow$ 第3四分位数は上から3番目の値だから

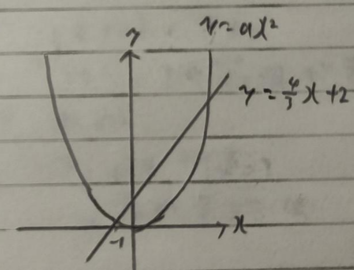
$\underline{7}$

(5) $y=\frac{1}{4}x^2\quad -2\leqq x\leqq4$

$\frac{1}{4}\times4^2=4$

$\underline{0\leqq y\leqq4}$

(6)

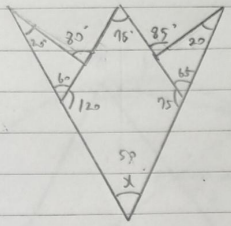


$(-1,\frac{2}{3})$ を $y=ax^2$ に代入して

$\frac{2}{3}=a$

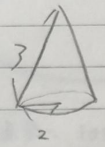
$\underline{a=\frac{2}{3}}$

(1)



$x=50°$

(2)



底 $2+2\times\pi=4\pi$

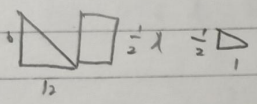
側 $3\times3\times\pi\times\frac{2}{3}=6\pi$

$4+6=10\pi$

10π

2

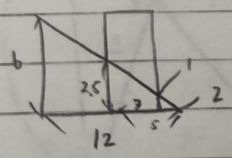
(1)



$y=\frac{1}{2}x\times x\times\frac{1}{2}$

$=\frac{1}{4}x^2$

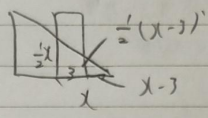
(2) $x=5$



$(5\times2.5\times\frac{1}{2})-(2\times1\times\frac{1}{2})=6.25-1=5.25$

$=\frac{525}{100}=\frac{21}{4}$

$3\leqq x\leqq12$



台形の公式より

$y=\{\frac{1}{2}x+\frac{1}{2}(x-3)\}\times3\times\frac{1}{2}$

$=(\frac{1}{2}x+\frac{1}{2}x-\frac{3}{2})\times\frac{3}{2}$

$=(x-\frac{3}{2})\times\frac{3}{2}$

$=\frac{3}{2}x-\frac{9}{4}$

(3) $y=\frac{1}{2}\times$□DEFG

$\frac{1}{2}\times3\times6=\frac{3}{2}x-\frac{9}{4}$

$\frac{3}{2}x=9+\frac{9}{4}$

$x=\frac{45}{4}\times\frac{2}{3}$

$=\frac{15}{2}$

(4) $1<1+h<3$ より

$1\leqq x<3$ の部分で考えれば

よいので、

$y=\frac{1}{4}x^2$ を使うと

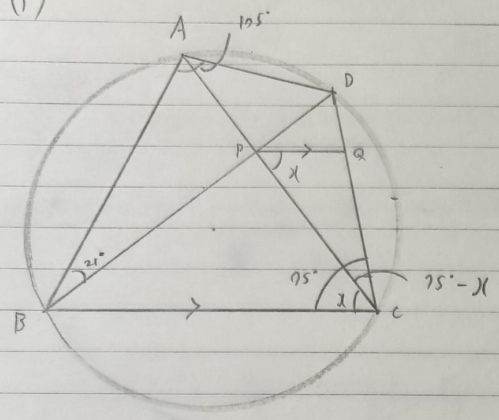
変化の割合は

$\frac{1}{4}\{1+(1+h)\}=\frac{h+2}{4}$

No.

3

(1)



∠DAB = 105°, ∠ABD = 21°

∠CPQ = 54°

∠PCB = ∠QPC = ∠x (平行線の錯角)

∠C = 180° − ∠A (円に内接する四角形の性質)

= 180° − 105°

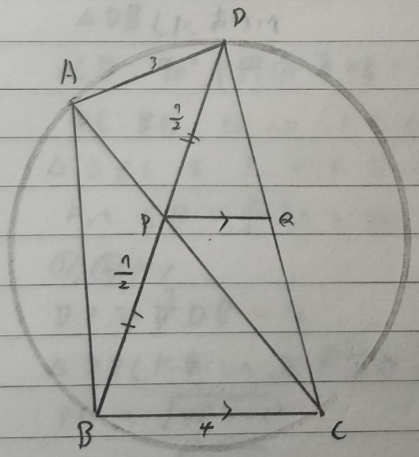
= 75°

∠DCA = ∠DBA ($\overset{\frown}{AD}$ に対する円周角)

75° − ∠x = 21°

∠x = 54°

(2)



点P, BDの中点, AD=3, BC=4, BD=1

PC = 14/3

(3)

△CPB ∽ △DPA より

PC : PD = CB : DA

PD = 1/2 DB

= 1/2 より

PC : 1/2 = 4 : 3

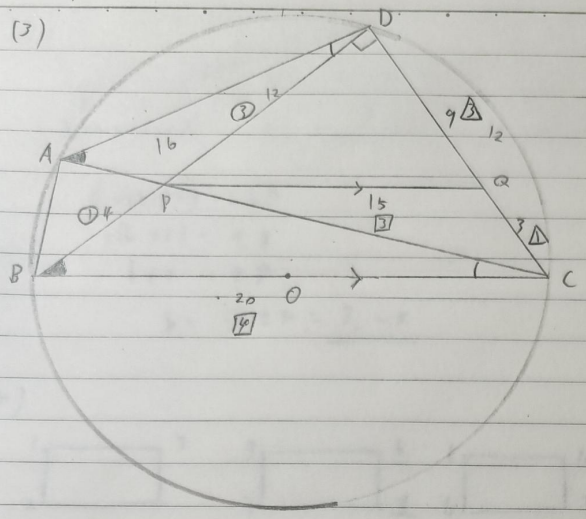
3×PC = 1x

PC = 1x/3

$12\sqrt{2}$ AD=

No.

(3)



BC=20 CD=12 PQ=15

PC=$12\sqrt{2}$ AD=$10\sqrt{2}$

△DPQ∽△DBC (PQ∥BC)

PQ:BC=15:20=3:4 より

DQ=$\frac{3}{4}$DC=9, QC=DC−DQ

=12−9

=3

DP:PB=DQ:QC (PQ∥BC)

=9:3

=3:1 …①

△DBCにおいて

∠D=90° (円の直径に対する円周角)

DC:BC=12:20=3:5 より

△DBCは3:4:5の直角三角形である。

よって DB=$\frac{4}{5}$BC=16 …②

①, ②より

DP=$\frac{3}{4}$DB=12

△DPCにおいて、三平方の定理より

PC=$\sqrt{DP^2+DC^2}$

=$\sqrt{12^2+12^2}$

=$12\sqrt{2}$

△DAP∽△CBPより

AD:BC=PD:PC

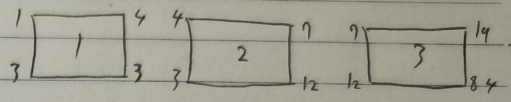
AD:20=12:$12\sqrt{2}$

$12\sqrt{2}$AD=240

AD=$\frac{20}{\sqrt{2}}=\frac{20\sqrt{2}}{2}=10\sqrt{2}$

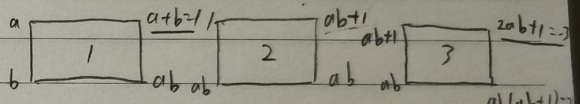
4

(1)



x=19, y=84

(2)



$\begin{cases} a+b=1 & \cdots① \\ 2ab+1=-3 & \cdots② \\ ab(ab+1)=2 & \cdots③ \end{cases}$

②より

2ab+1=−3

2ab=−4

ab=−2

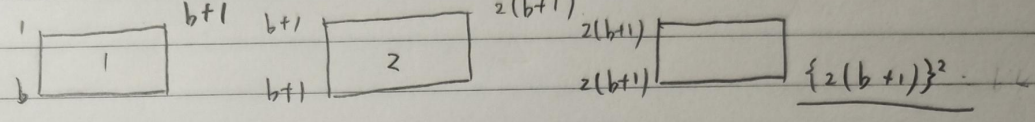
a, bは整数かつa<b

だが, a=−1, b=2

または a=−2, b=1

この2条件のうち①を満たすa, bの値は、a=−1, b=2

(3)



$\{2(b+1)\}^2$

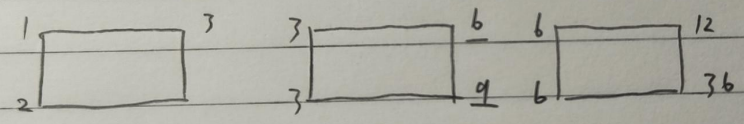
$\{2(b+1)\}^2 = 64$

$2(b+1) = \pm 8$

$b+1 = \pm 4$

$b = -1 \pm 4 = 3, -5$

(4)



$y = ax^2$ に (b, a) を代入して

$a = 36a$

$a = \frac{1}{4}$