

(2018年度)

4

88.9%

$\angle = 90^\circ$
 $A(-3, 3)$

$\angle = 90^\circ$

$\frac{1}{3}$

②

36.2%

(1) $CO:OD = 6:7$

$D(0, -7)$

ADの中点E $(\frac{-3+0}{2}, \frac{3-7}{2})$

$E(-\frac{3}{2}, -2)$ $F(6, 0)$

$$\begin{cases} -2 = -\frac{3}{2}a + b \quad \text{①} \\ 0 = 6a + b \quad \text{②} \end{cases}$$

② - ①

$$0 = 6a - \frac{3}{2}$$

$$-8 = -6a + 4b$$

$$6a = \frac{3}{2}$$

$$0 = 6a + b$$

$$a = \frac{3}{12} = \frac{1}{4}$$

$$-8 = 5b$$

$$a = \frac{4}{15}$$

$$b = -\frac{8}{5}$$

$$\frac{4}{15} \quad \text{④}$$

⑤

28%

(2) BD 中点

$B(6, 12), D(0, -7)$ の中点Eを通る $y = \frac{19}{6}x - 7$

AF 式

$A(-3, 3), F(6, 0) \rightarrow y = -\frac{1}{3}x + 2$

$$\begin{cases} y = \frac{19}{6}x - 7 \\ y = -\frac{1}{3}x + 2 \end{cases}$$

$$\frac{19}{6}x - 7 = -\frac{1}{3}x + 2$$

$$y = -\frac{1}{3}x + 2$$

$$19x - 42 = -2x + 12$$

$$y = -\frac{1}{3} \cdot \frac{54}{7} + 2$$

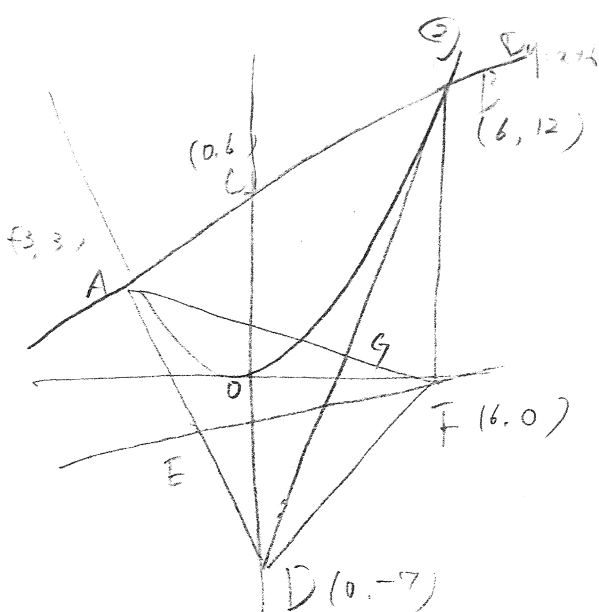
$$21x = 54$$

$$= -\frac{6}{7} + \frac{14}{7}$$

$$x = \frac{54}{21} = \frac{18}{7}$$

$$= \frac{8}{7}$$

$$G(\frac{18}{7}, \frac{8}{7})$$



$$\triangle AGB : \triangle BFG$$

$$AG : FG$$

$$= \frac{18}{7} - (-3) : 6 - \frac{18}{7} \leftarrow x \text{座標を考慮}$$

$$= \frac{18}{7} + \frac{21}{7} : \frac{42}{7} - \frac{18}{7}$$

$$= \frac{39}{7} : \frac{24}{7}$$

$$= 39 : 24$$

$$= 13 : 8$$

$$\triangle BFG : \triangle DFG$$

$$BG : DG$$

$$= 6 - \frac{18}{7} : \frac{18}{7} - 0 \leftarrow x \text{座標}$$

$$= \frac{42}{7} - \frac{18}{7} : \frac{18}{7}$$

$$= \frac{24}{7} : \frac{18}{7} = 24 : 18$$

$$= 8 : 6 \quad \text{②}$$

①, ②より

$$\triangle AGB : \triangle BFG : \triangle DFG$$

$$13 : 8$$

$$8 : 6$$

$$= 13 : 6$$

2018年度

4 (別解) (面積と求めるパターン)

(1)

BDの式

B(6,12) D(0,-7)の2点を通る直線

$$y = ax - 7 \text{ に } (6,12) \text{ を代入}$$

$$12 = 6a - 7$$

$$a = \frac{19}{6} \quad \textcircled{BD} \quad y = \frac{19}{6}x - 7$$

AFの式

A(-3,3), F(6,0)の2点を通る直線

$$\begin{cases} 3 = -3a + b \\ 0 = 6a + b \end{cases} \quad \begin{aligned} b &= 6 \times (-\frac{1}{3}) + b \\ b &= 2 \end{aligned}$$

$$\rightarrow \begin{aligned} 3 &= -9a \\ a &= -\frac{1}{3} \end{aligned} \quad \textcircled{AF} \quad y = -\frac{1}{3}x + 2$$

BDとAFの交点G

$$\begin{cases} y = \frac{19}{6}x - 7 \\ y = -\frac{1}{3}x + 2 \end{cases}$$

$$\frac{19}{6}x - 7 = -\frac{1}{3}x + 2$$

$$19x - 42 = -2x + 12$$

$$21x = 54$$

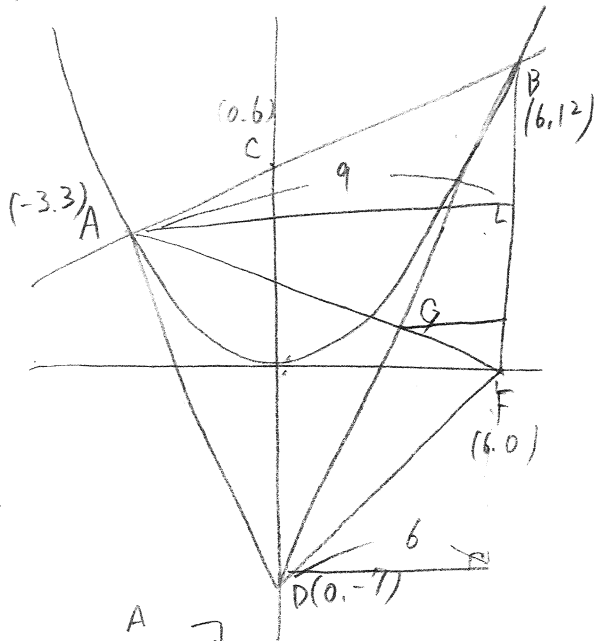
$$x = \frac{54}{21} = \frac{18}{7}$$

$$y = -\frac{1}{3} \times \frac{18}{7} + 2$$

$$= -\frac{6}{7} + \frac{14}{7}$$

$$= \frac{8}{7}$$

$$G(\frac{18}{7}, \frac{8}{7})$$



$$\triangle ABF = 12 \times 9 \times \frac{1}{2} = 54$$

$$\triangle DBF = 12 \times 6 \times \frac{1}{2} = 36$$

$$\triangle GBF = 12 \times (6 - \frac{18}{7}) \times \frac{1}{2}$$

$$= 6 \times \frac{42-18}{7}$$

$$= \frac{6 \times 24}{7}$$

$$= \frac{144}{7}$$

$$\triangle AGB = \triangle ABF - \triangle GBF = \frac{378}{7} - \frac{144}{7} = \frac{234}{7}$$

$$\triangle DFG = \triangle DBF - \triangle GBF = \frac{252}{7} - \frac{144}{7} = \frac{108}{7}$$

$$\triangle AGB : \triangle DFG$$

$$= \frac{234}{7} : \frac{108}{7}$$

$$= 234 : 108$$

$$= 78 : 36$$

$$= 39 : 18$$

$$= 13 : 6$$

4

89.3%
 $2 = 40$
 $a = \frac{1}{2}$

73.7%
Ca 座標は -3, 5.7 y = -3

B(-2, 2) 通过直系線

$$\begin{array}{r} -3 = -3a + b \\ -) 2 = -2a + b \\ \hline -5 = -a \\ a = 5 \end{array}$$

$$2 = -2 \cdot 5 + b$$
$$b = 2 + 10$$
$$\underline{b = 12}$$

$$y = 5x + 12$$

(5) 求める
 $y = x$
 $y = -x + 2$

$$g_L = -x + 2$$

22-2

9-1

$$D(1,1)$$

$$= \frac{4}{3} \left(\frac{t}{6} \Delta ACE \right) = \frac{1}{2} \Delta ACE \quad \text{#10}$$

$$2 \times \frac{2}{3} \times \frac{1}{2} = \frac{1}{2} \quad \text{Einfach!}$$

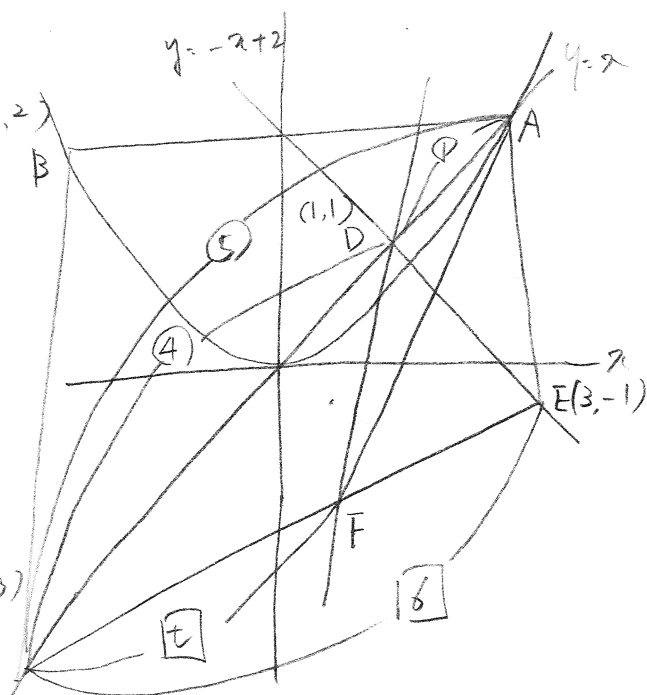
$$\frac{2}{15} \tau = \frac{1}{2}$$

$$t = \frac{1}{2} \leq \frac{15}{2}$$

$$\tau = \frac{15}{4}$$

$$F_x = -3 + \frac{15}{4} = -\frac{12}{4} + \frac{15}{4}$$

$$= \frac{3}{4}$$



(イ)も6次の要根問題は負
だから正當率が高い。

(2017年度)

[4] (別解)(平行線の利用)

CとEの中点M(0, -2)

$$\triangle ACM = \frac{1}{2} \triangle ACE$$

Aを通りDMに平行な直線と
CEの交点をFとすると、

$$\triangle ADM = \triangle FDM$$

から

$$\begin{aligned}\triangle ACM &= \triangle CDM + \triangle ADM \\ &= \triangle CDM + \triangle FDM \\ &= \triangle CDF = \frac{1}{2} \triangle ACE \quad \text{とわかる}\end{aligned}$$

DMの傾き

$$y = 3x - 2$$

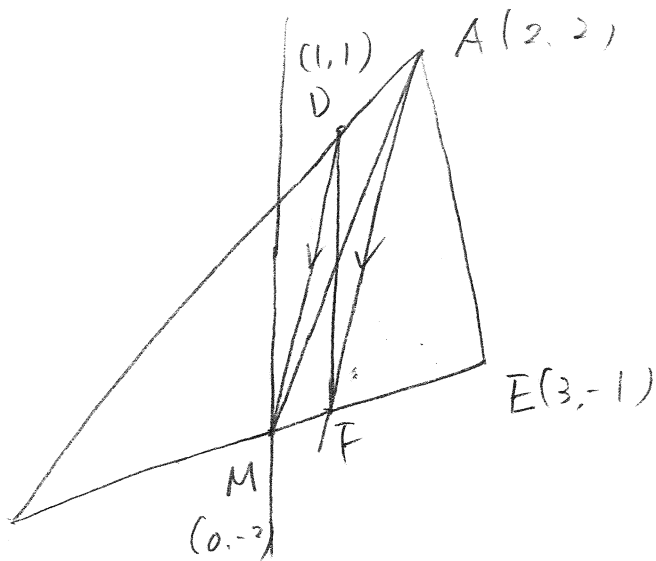
A(2, 2)を通りDMに平行な直線AF

$$y = 3x + b \text{ に } (2, 2) \text{ を代入}$$

$$2 = 6 + b$$

$$b = -4$$

$$\textcircled{AF} \quad y = 3x - 4$$



CEの式

$$C(-3, -3), E(3, -1)$$

$$-3 = -3a + b \quad -3 = -3a - 2$$

$$-1 = 3a + b \quad 3a = 1$$

$$\begin{array}{r} -1 \\ -4 = 2b \end{array} \quad a = \frac{1}{3}$$

$$b = -2$$

$$\textcircled{CE} \quad y = \frac{1}{3}x - 2$$

CEとAFの交点Fは

$$\begin{cases} y = \frac{1}{3}x - 2 \\ y = 3x - 4 \end{cases}$$

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

$$9x - 12 = x - 6$$

$$8x = 6$$

$$x = \frac{3}{4} \quad \text{(Fのx座標)}$$