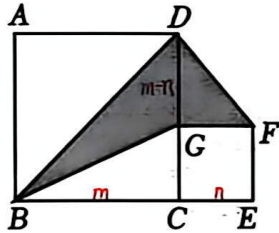


请在各题目的答题区域内作答，超出黑色矩形边框限定区域的答案无效

五、解答题 (共 30 分)

24.

解: (1) $\because a-b=5,$
 $a^2+b^2=33$
 $\therefore ab = \frac{a^2+b^2-(a-b)^2}{2}$
 $= \frac{33-5^2}{2}$
 $= 4$



(2) $\because a^2+ab=28$ ①
 $b^2+ab=21$ ②

由①-②得 $a^2-b^2=7$
 即 $(a+b)(a-b)=7$

由①+②得 $a^2+2ab+b^2=49$
 即 $(a+b)^2=49$

$a+b = \pm 7$

I. 当 $a+b=7$ 时, $a-b=1$

II. 当 $a+b=-7$ 时, $a-b=-1$

综上所述, $a-b=1$ 或 -1

(3) 设 $BC=m, CE=n$

由题意知 $m+n=21, m^2+n^2=261$ 且 $m>n$

$S_{阴影} = \frac{1}{2}m(m-n) + \frac{1}{2}n(m-n)$
 $= \frac{1}{2}(m+n)(m-n)$

$\therefore m+n=21$

$\therefore S_{阴影} = \frac{21}{2}(m-n)$

$(m-n)^2 = 2(m^2+n^2) - (m+n)^2$

$= 2 \times 261 - 21^2$

$= 81$

$\therefore m>n$ 即 $m-n>0$

$\therefore m-n=9$

$\therefore S_{阴影} = \frac{21}{2} \times 9 = \frac{189}{2}$

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25.

(1) 直接写出 $a=5, b=10.5, k=4$;

解:

(2) ① 当 $0 < t \leq 5$ 时, P 以 20m/s 的速度运动

$y=2t$

② 当 $5 < t \leq 10.5$ 时,

$2 \times 5 - 6 = 4(\text{cm})$

$v_p = \frac{10-4}{6.5-5} = 4(\text{cm/s})$

$y = 2 \times 5 + 4(t-5) = 4t-10$

综上所述, $y = \begin{cases} 2t, & 0 \leq t \leq 5 \\ 4t-10, & 5 < t \leq 10.5 \end{cases}$

(3)

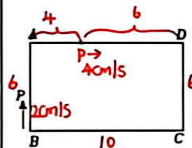
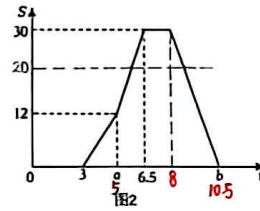


图1



① 当 $5 < t < 6.5$ 时

$12 + \frac{1}{2} \times 6 \times 4(t-5) = 20$

$t = \frac{17}{3}$

② $8 < t < 10.5$ 时

$30 - \frac{1}{2} \times 6 \times 4(t-8) = 20$

$t = \frac{57}{6}$

\therefore 当 P 出发 $\frac{17}{3}$ 秒或 $\frac{57}{6}$ 秒时, $S_{\triangle ABP} = 20\text{cm}^2$

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26.

解: (1) $\because AB=BC, \angle B=60^\circ$
 $\therefore \triangle ABC$ 是等边三角形
 $\therefore \angle A=60^\circ, BC=AC=4$
 $\therefore ND \parallel AF$
 $\therefore \angle BND = \angle A = 60^\circ, \angle 1 = \angle 2$
 $\therefore \angle BND = 60^\circ, \angle B = 60^\circ$
 $\therefore \triangle BND$ 是等边三角形
 $\therefore BN = DN = BD$
 $\therefore BN = CF$
 $\therefore DN = CF$
 在 $\triangle DNE$ 和 $\triangle CFE$ 中
 $\begin{cases} \angle 3 = \angle 4 \\ \angle 1 = \angle 2 \\ DN = CF \end{cases}$

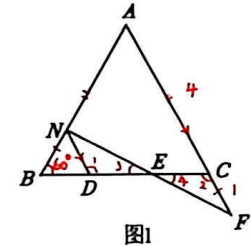


图1

$\therefore \triangle DNE \cong \triangle CFE (\text{AAS})$

$\therefore DE = CE$
 $DN = CF = 1$

$\therefore BD = DN = 1$

$\therefore DC = BC - BD = 3$

即 $DE + CE = 3$

$\therefore DE = CE$

$\therefore CE = 1.5$

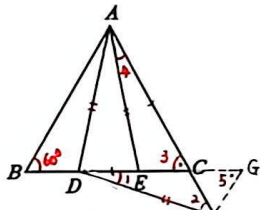


图2

(2) 延长 BC 至点 G, 使 $CG = CF$, 连接 GF.

$\because AC=BC, \angle B=60^\circ$

$\therefore \triangle ABC$ 为等边三角形

$\therefore AB=AC$

$\angle B = \angle BAC = \angle 3 = 60^\circ$

$\therefore \angle FCG = \angle 3 = 60^\circ$

$\therefore CG = CF$

$\therefore \triangle FCG$ 为等边三角形

$\therefore \angle 5 = \angle 3 = 60^\circ, GF = CF$

$\therefore \angle 3$ 是 $\triangle CDF$ 的外角

$\therefore \angle 1 + \angle 2 = \angle 3 = 60^\circ$

$\therefore \angle BAE + \angle 4 = \angle BAC = 60^\circ$

且 $\angle 1 = \angle 4$

$\therefore \angle BAE = \angle 2$

$\therefore DA = DF$

$\therefore \angle DAC = \angle 4$

$\therefore \angle BAE = \angle DAC$

$\therefore \angle BAE - \angle DAE = \angle DAC - \angle DAE$

即 $\angle BAD = \angle CAE$

在 $\triangle BAD$ 和 $\triangle CAE$ 中

$\begin{cases} \angle BAD = \angle CAE \\ AB = AC \\ \angle B = \angle C \end{cases}$

$\therefore \triangle BAD \cong \triangle CAE (\text{ASA})$

$\therefore DA = EA$

$\therefore DA = DF$

$\therefore EA = FD$

在 $\triangle AED$ 和 $\triangle AFD$ 中

$\begin{cases} \angle 3 = \angle 5 \\ \angle 4 = \angle 1 \\ EA = FD \end{cases}$

$\therefore \triangle AED \cong \triangle AFD (\text{AAS})$

$\therefore CE = GF$

$\therefore GF = CF$

$\therefore CE = CF$

(3) $\frac{24}{5}$

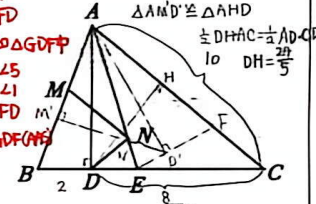


图3

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