باران کاظمی   یازدهم C   تکلیف شماره ۱۷   ۲۰

۱-

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

$k = 1 + b \Rightarrow b = k - 1 \qquad m = -2 + b \Rightarrow b = m + 2$

$\Rightarrow m + 2 = k - 1 \Rightarrow \underbrace{k - m}_{\text{تفاضل } y \text{ ها}} = 3 \;,\; \underbrace{-2 - 4}_{\text{تفاضل } x \text{ ها}} = -6 \Rightarrow$ اندازه ضلع $= x = \sqrt{36 + 9} = \sqrt{45}$

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مساحت مربع $= x^2 = (\sqrt{45})^2 = \boxed{45}$

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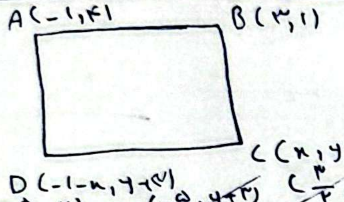

$(\frac{3}{2}, -1)$

$(-\frac{5}{2}, 2)$ $\cancel{(-\frac{5}{2}, y+3)}$ $\cancel{(\frac{3}{2}, y)}$

$x_A + x_C = x_B + x_D$

$\cancel{-1} + x = 3 \cancel{-1} - x$

$\Rightarrow 2x = 3 \Rightarrow \boxed{x = \frac{3}{2}}$

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$y_A + y_C = y_B + y_D \Rightarrow 4 + y = 1 + y + 3 \Rightarrow 4 = 4 \propto \qquad \rightarrow \frac{2 - 2y}{3} = \frac{-4}{-3}$

$\Rightarrow -2y + 2 = 4 \Rightarrow 2y = -2 \Rightarrow \boxed{y = -1}$

طول AB $= \sqrt{16 + 9} = 5$

طول BC $= \sqrt{\frac{9}{4} + 4} = \sqrt{\frac{25}{4}} = \frac{5}{2}$

$\Big\} \rightarrow 2(\frac{5}{2}) + 2(5) = 5 + 10 = \boxed{15}$

۳-

$2mx + (m^2 - 1)y = 3$

$\Rightarrow$ شیب $= a = \frac{-2m}{m^2 - 1}$

$a = \tan\alpha \Rightarrow \tan 60^\circ = \sqrt{3}$

$\Big\} \rightarrow \frac{-2m}{m^2 - 1} = \sqrt{3} \Rightarrow \sqrt{3}m^2 - \sqrt{3} = -2m$

$\Rightarrow \sqrt{3}m^2 + 2m - \sqrt{3} = 0$

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$m = \frac{-2 \pm \sqrt{\cancel{4 + 12}}^{\,4}}{2\sqrt{3}} = \Big\langle \; \frac{4 - 2}{2\sqrt{3}} = \frac{\cancel{2}}{\cancel{2}\sqrt{3}} = \frac{\sqrt{3}}{3} \;;\; \frac{-2 - 4}{2\sqrt{3}} = \frac{-\cancel{6}^{\,3}}{\cancel{2}\sqrt{3}} = -\frac{3\sqrt{3}}{3} = -\sqrt{3}$

$\frac{\sqrt{3}}{3} - (-\sqrt{3}) = \frac{\sqrt{3} + 3\sqrt{3}}{3} = \boxed{\frac{4\sqrt{3}}{3}}$

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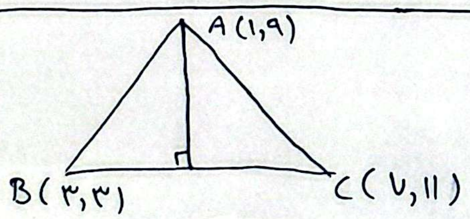

$y_{BC} = ax + b \qquad a = \frac{11 - 3}{7 - 3} = \frac{8}{4} = 2$

$y = 2x + b$

$3 = 6 + b$

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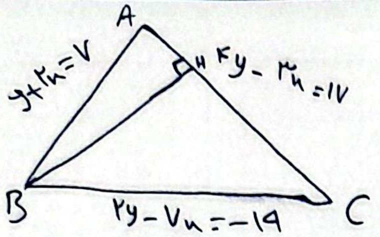
$\Rightarrow b = -3 \Rightarrow y = 2x - 3 \Rightarrow y - 2x + 3 = 0$

فاصله A از BC $= \frac{|ax + by - c|}{\sqrt{a^2 + b^2}} = \frac{|-2 + 9 + 3|}{\sqrt{1 + 4}} = \frac{10}{\sqrt{5}} = \frac{10\sqrt{5}}{5} = \boxed{2\sqrt{5}}$

-۵



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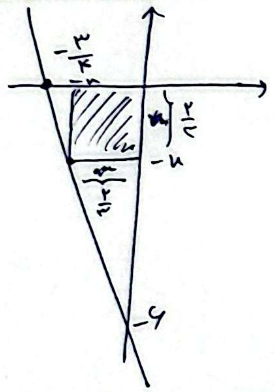
$-۲x+۷=\frac{۷}{۲}x-\frac{۱۹}{۲}\Rightarrow\frac{۱۱}{۲}x=\frac{۳۳}{۲}\Rightarrow x=۳ \quad \Rightarrow y=۱$

$$\frac{|ax_0+by_0-c|}{\sqrt{a^2+b^2}}=\frac{|۴-۹-۱۷|}{\sqrt{۲۵}}=\frac{|-۲۲|}{۵}=\boxed{\frac{۲۲}{۵}}$$

-۶



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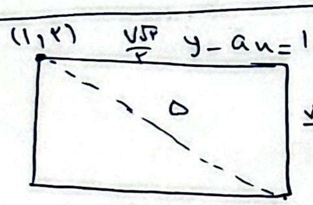
$|a|=\frac{۶}{\frac{۳}{۴}}=۸\Rightarrow a=-۸ \qquad y=-۸x-۶$

$-x=-۸(-x)-۶$

$۹x=۶\Rightarrow\boxed{x=\frac{۲}{۳}}$

قطر $=\sqrt{\frac{۴}{۹}+\frac{۴}{۹}}=\boxed{\frac{۲\sqrt{۲}}{۳}}$

-۷



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$y-ax=۱\Rightarrow y=ax+۱\Rightarrow y=x+۱$

$۲=-۱+۱+\alpha$

$a=\frac{۱}{a}\Rightarrow a^2=۱\Rightarrow a=۱$ ✓

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$ay-x=a-۱$

$y=\frac{x}{a}+a-۱\Rightarrow y=x$

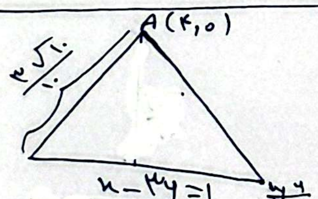
$۲=-۱-۲\alpha$

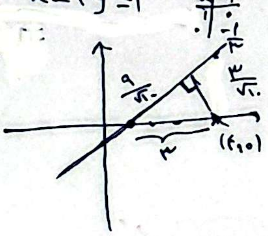
$$\frac{|c-c'|}{\sqrt{a^2+b^2}}=\frac{|۱-۰|}{\sqrt{۱+۱}}=\frac{\sqrt{۲}}{۲}$$

$\sqrt{۲۵-\frac{۱}{۲}}=\sqrt{\frac{۵۰-۱}{۲}}=\frac{۷\sqrt{۲}}{۲}$

مساحت مستطیل $=\frac{\sqrt{۲}}{۲}\times\frac{۷\sqrt{۲}}{۲}=\boxed{\frac{۷}{۲}}$

-۸





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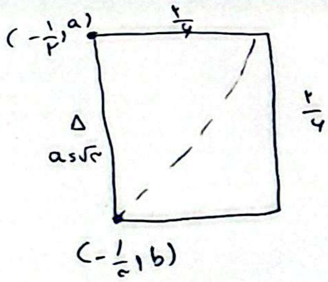
$$h=\frac{|ax+by-c|}{\sqrt{a^2+b^2}}=\frac{|۴-۱|}{\sqrt{۱+۹}}=\frac{۳}{\sqrt{۱۰}}$$

$\sqrt{۹-\frac{۹}{۱۰}}=\frac{۹}{\sqrt{۱۰}}$

$\frac{۳}{\sqrt{۱۰}}\times\frac{۹}{\sqrt{۱۰}}\times\frac{۱}{۲}=\boxed{\frac{۲۷}{۲۰}}$

۹-



$y = \sqrt{2}\,x + b'$

$a = -\frac{\sqrt{2}}{4} + b' \Rightarrow b' = a + \frac{\sqrt{2}}{4}$

$b = -\frac{\sqrt{2}}{2} + b' \Rightarrow b' = b + \frac{\sqrt{2}}{2}$

$a + \frac{\sqrt{2}}{4} = b + \frac{\sqrt{2}}{2}$

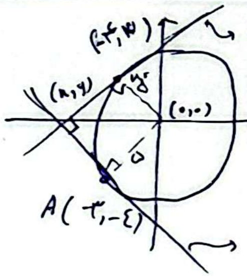
$a - b = -\frac{\sqrt{2}}{4}$

۲

طول ضلع $= \sqrt{\frac{1}{16} + \frac{1}{64}} = \sqrt{\frac{4}{64}} = \frac{2}{8}$

قطر $= \sqrt{\left(\frac{1}{2}\right)^2 + \left(\frac{1}{2}\right)^2} = \boxed{\frac{\sqrt{2}}{2}}$

۱۰-



$y = +\frac{4}{3}x + b$

$x = \sqrt{9+16} = 5$

$3 = -\frac{16}{3} + b \Rightarrow b = \frac{25}{3}$ $\quad y = \frac{4}{3}x + \frac{25}{3}$ ★

$y = -\frac{3}{4}x + b \Rightarrow -4 = \frac{9}{4} + b \Rightarrow b = -\frac{25}{4}$

$y = -\frac{3}{4}x - \frac{25}{4}$ ★

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★ $\longrightarrow \frac{4}{3}x + \frac{25}{3} = -\frac{3}{4}x - \frac{25}{4}$

$\frac{25}{12}x = \frac{-100 - 75}{12}$

$25x = -175 \Rightarrow \boxed{x = -7}$

$\boxed{y = -1}$

$\boxed{xy = 7}$