

$$m_{AB} = \frac{y_B - y_A}{x_B - x_A} = \frac{1 - (-4)}{2 - 1} = \frac{-15}{1} = -15$$

IV, 20

(3) (4) (5)

$$m \rightarrow m_{AB} \times m = -1 \rightarrow m = \frac{1}{15}$$

-1

5

$$\frac{x_A + x_B}{2} = \frac{y + 1}{2} = 1$$

$$y - y_m = m(x - x_m)$$

$$y - 1 = \frac{1}{15}(x - 2) \rightarrow y = \frac{1}{15}x + \frac{13}{15}$$

$$\frac{y_A + y_B}{2} = \frac{1 + 1}{2} = 1$$

$$BC = \sqrt{4 + 14} = \sqrt{18}$$

-1

$$m_{BC} = \frac{y_C - y_B}{x_C - x_B} = \frac{2 - 1}{-1 - (-1)} = \frac{-1}{0}$$

$$\delta - 1 = 15$$

1, 20

$$y - y_B = m(x - x_B) = y - 1 = \frac{-1}{15}(x + 1) \rightarrow y = -\frac{1}{15}x + \frac{14}{15}$$

$$y = -\frac{1}{15}x + \frac{14}{15} \quad AH = \frac{1 \times 1 + 1 \times 1}{\sqrt{1^2 + 1^2}} = \frac{2}{\sqrt{2}} = \sqrt{2}$$

$$(x - x_0 - x_1) \rightarrow x - x_0 - x_1 = 0 \quad y - y_0 - y_1 = 0 \rightarrow a = 1$$

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$$r = \frac{|c' - c|}{\sqrt{a'^2 + b'^2}} = \frac{|1 - (-1)|}{\sqrt{1^2 + 1^2}} = \frac{2}{\sqrt{2}} = \sqrt{2} \rightarrow r = \frac{2}{\sqrt{2}}$$

$$S = \pi r^2 = \pi \times \frac{4}{2} \rightarrow 2\pi$$

$$m \left| \begin{array}{l} \frac{x_A + x_B}{2} = \frac{y + 1}{2} = 1 \\ \frac{y_A + y_B}{2} = \frac{1 + 1}{2} = 1 \end{array} \right.$$

$$m_{AB} = \frac{y_B - y_A}{x_B - x_A} = \frac{1 - 1}{1 - 1} = -1 \rightarrow m_{AB} = -1$$

$$CH \rightarrow y - y_C = m(x - x_C)$$

$$y + 1 = m + 1 = y = m - 1$$

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$$y - 1 = -1(x - 1) \rightarrow y = -x + 2$$

$$\sqrt{(x - x_0)^2 + (y - y_0)^2} = r \rightarrow \sqrt{(x - 1)^2 + (y - 1)^2} = \sqrt{2} \rightarrow x = 1, y = 1$$

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

$$y + m_1 x = 1 \rightarrow y = -\frac{1}{m_1} x + 1$$

-3

$$(r_m - r)x + (a - m)y - r = 0 \quad m_1 = \frac{-(r_m - r)}{a - m} = \frac{r_m - r}{a - m}$$

$$(m+1)x - (r_m - r)y + 1 = 0 \quad m_2 = -\frac{(m+1)}{-(r_m - r)} = \frac{m+1}{r_m - r}$$

$$m_1 \times m_2 = -1$$

$$\frac{r_m - r}{a - m} \times \frac{m+1}{r_m - r} = -1$$

$$a(m+1) - 1(r_m - r) = 0 \rightarrow \Delta \leq 0$$

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$$AB = x + y = r \quad y = -\frac{1}{r}x + \frac{r}{r}$$

$$AC: y = r - 1$$

$$BC: x + y = r \rightarrow y = -x + r$$

$$A(1,1) \quad B(0,1) \quad C\left(\frac{r}{2}, \frac{r}{2}\right)$$

$$-\frac{1}{r}x_A + \frac{r}{r} = r - 1 \rightarrow \frac{1}{r}x_A = \frac{r}{r} \rightarrow x_A = 1 \quad y_A = 1$$

$$-x_B + r = \frac{1}{r}x_B + \frac{r}{r} \rightarrow \frac{1}{r}x_B = \frac{r}{r} \rightarrow x_B = r \quad y_B = -1$$

$$y_C - 1 = -x_C + r \rightarrow x_C = r \rightarrow x_C = \frac{r}{2} \quad y = \frac{r}{2}$$

$$m \left| \frac{x_B + x_C}{y_B + y_C} \rightarrow \frac{r + \frac{r}{2}}{-1 + \frac{r}{2}} = \frac{1}{r} \right.$$

$$Am = \sqrt{(x_A - x_m)^2 + (y_A - y_m)^2} = \sqrt{\left(\frac{1}{2}\right)^2 + \left(\frac{r}{2}\right)^2} = \frac{\sqrt{1+r^2}}{2}$$

$$\sqrt{\frac{1+r^2}{4}} = \frac{\sqrt{1+r^2}}{2}$$

$$AH = \frac{|1+1|}{\sqrt{1+r^2}} = \frac{2}{\sqrt{1+r^2}} = \sqrt{r} \quad \frac{Am}{AH} = \frac{\frac{\sqrt{1+r^2}}{2}}{\sqrt{r}} = \frac{\sqrt{r}}{2}$$

$$d: y = -\frac{1}{r}x + b \xrightarrow{A(a,0)} 0 = -\frac{1}{r}a + b \rightarrow b = \frac{1}{r}a \rightarrow a = rb$$

$$\frac{|b|}{\sqrt{1+\frac{1}{r^2}}} = \frac{|b|}{\frac{\sqrt{1+r^2}}{r}} = \sqrt{r} \rightarrow |b| = \sqrt{r} \quad \Delta \sqrt{a^2 + b^2} = \sqrt{r^2 + 1} = \sqrt{1+r} = \sqrt{1+r} = \sqrt{1+r}$$

5

-r

$$mq - fm = r_m \rightarrow y = \frac{f}{m} n + r$$

$$y + mn = n + r \rightarrow y = (1-m)n + r$$

$$y = 0$$

$$S_D = \left| \frac{m' - m + K}{r(m-1)} \right| \sqrt{K} \frac{1}{r} = \frac{A}{r}$$

$$\hookrightarrow m = K, \quad m + K_{m-1} = 0$$

$$\frac{C}{a} = -1$$

$$y_B = \frac{f}{a} n_B + r, y_B = 0 \rightarrow \frac{f}{a} n_B + r = 0 \rightarrow \frac{f}{a} n_B = -r = n_B = \frac{-m}{r}$$

$$y_C = (1-m)n_C + r, y_C = 0 \rightarrow 0 = (1-m)n_C + r \rightarrow (1-m)n_C = -r$$

$$n_C = \frac{r}{m-1} \rightarrow y_C = 0$$

$$-r = t - \frac{C+r}{r} \rightarrow \frac{C+r}{r} = t \quad C+r = tr \quad C = r$$

$$d_1 y = r_m r$$

$$d_r = y = r_m - C$$

$$d_r = r_m - \frac{C+r}{r} \rightarrow d_r, d_1, d_2$$

$$d_{r, g} = r_m - r$$

$$y = n + 0, \quad m d = 1 \rightarrow m_{AA'} = -1$$

$$y = y_A = -1 (n - n_A) \rightarrow y - r = -n + 1$$

$$y = -n + r$$

$$n + d = -n + r \rightarrow r_m = -r \rightarrow n = -1 \rightarrow y = r$$

$$-m \left| \begin{array}{l} \frac{a+1}{r} = -1 \rightarrow a+1 = -r \rightarrow a = -r \\ \frac{b+r}{r} = t \rightarrow b+r = tr \rightarrow b = r \end{array} \right.$$

$$r(b-a) = 1r - (-r) = 1r + r = 2r$$

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