

$$\frac{x}{y} = \frac{a}{r} \rightarrow x = \frac{a}{r} y$$

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17, 18

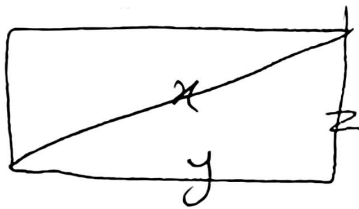
-1

$$\frac{x+z}{y} = \frac{1+\sqrt{a}}{r} \quad \frac{\frac{a}{r}y+z}{y} = \frac{1+\sqrt{a}}{r}$$

(2)

$$\frac{a}{r}y + rz = y + y\sqrt{a} \quad (-\frac{r}{r} + \sqrt{a})y = rz \rightarrow z = \frac{(\sqrt{a} - \frac{r}{r})y}{r}$$

$$\frac{\frac{a}{r}y}{\frac{a}{r}y} = \frac{(x+z)y}{(x)y} = \frac{(\frac{a-r+r\sqrt{a}}{r})y}{\frac{a}{r}y} = \frac{1+\sqrt{a}}{\frac{a}{r}} = \boxed{\frac{r+r\sqrt{a}}{a}} \checkmark$$



$$\frac{x}{y} = \frac{1+\sqrt{a}}{r} \rightarrow x = \frac{1+\sqrt{a}}{r} y$$

(2)

-2

$$y^2 + z^2 = x^2 \rightarrow y^2 + z^2 = \frac{1+\sqrt{a}}{r} y^2 \rightarrow z^2 = \frac{1+\sqrt{a}}{r} y^2$$

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

$$z^2 = \frac{1+\sqrt{a}}{r} y^2$$

$$ra + \sqrt{ra^2 + fa} = r \quad \frac{a+1}{a}$$

(2)

$$\sqrt{ra^2 + fa} = r - ra \rightarrow ra^2 + fa = r + 9a^2 - 12a \rightarrow 7a^2 - 14a + f = 0$$

$$\frac{\frac{r}{v} + 1}{\frac{r}{v}} = \frac{\frac{9}{r}}{\frac{r}{v}} = \boxed{\frac{9}{r}} \checkmark \quad \frac{14 \pm 12}{14} = \frac{r}{v} \checkmark \quad \Delta = 202 - 112 = 144 \quad \leftarrow$$

$$\frac{x+1}{\sqrt{x-1}+r} = \frac{\sqrt{x+1}}{r-\sqrt{x-1}} = \frac{x-1}{\sqrt{x-1}}$$

$$k = \sqrt{x-1}$$

(2)

$$\frac{\sqrt{k^2+r}}{k+r} - \frac{\sqrt{k^2+r}}{r-k} = \frac{k}{k} = k \quad \frac{(r-k)\sqrt{k^2+r} - (k+r)\sqrt{k^2+r}}{9-k^2} = \frac{-2k\sqrt{k^2+r}}{9-k^2}$$

$$\frac{-2k\sqrt{k^2+r}}{9-k^2} = k \rightarrow \frac{-2\sqrt{k^2+r}}{9-k^2} = 1 \rightarrow -2\sqrt{k^2+r} = 9-k^2$$

$$k^4 - 2rk^2 + r^2 = 0 \leftarrow f(k^2+r) = (k^2-9)^2 \leftarrow 2\sqrt{k^2+r} = k^2-9$$

$$k^2 = y \rightarrow y^2 - 2ry + r^2 = 0 \rightarrow y = 11 \pm \sqrt{r} \rightarrow t = \sqrt{11 + \sqrt{r}}$$

$$t^2 + 1 = x \leftarrow \boxed{12 + \sqrt{r} = x}$$

$$\frac{1}{r-x+r} - \frac{1}{r-\sqrt{r-x}} = \frac{r-x}{9\sqrt{r-x}} \quad \sqrt{r-x} = k$$

$$\frac{1}{k+r} - \frac{1}{r-k} = \frac{k}{9k} \rightarrow \frac{+2k}{r-k^2} = \frac{k}{9}$$

$$10k = rk - k^3 \rightarrow k^3 + 4k = 0 \rightarrow k(k^2+4) = 0$$

$$k=0 \rightarrow \sqrt{r-x}=0 \rightarrow \boxed{x=2}$$

$$k=\pm\sqrt{4} \rightarrow \sqrt{r-x}=0 \rightarrow \boxed{x=-4}$$

جميع جواب

$$\frac{1}{x^2} + \frac{1}{(1-x)^2} = \frac{140}{9}$$

$$\left(\frac{1}{x} + \frac{1}{1-x}\right)^2 - 2\left(\frac{1}{x(1-x)}\right) = \frac{140}{9}$$

$$\left(\frac{1}{x(1-x)}\right)^2 - 2\left(\frac{1}{x(1-x)}\right) = \frac{140}{9}$$

$$t^2 - 2t = \frac{140}{9} \rightarrow t^2 - 2t - \frac{140}{9} = 0$$

$$t-1 = \frac{12}{3} \rightarrow t = \frac{15}{3}$$

$$t-1 = -\frac{12}{3} \rightarrow t = -\frac{10}{3}$$

$$t-1 = \frac{12}{3} \rightarrow t = \frac{15}{3}$$

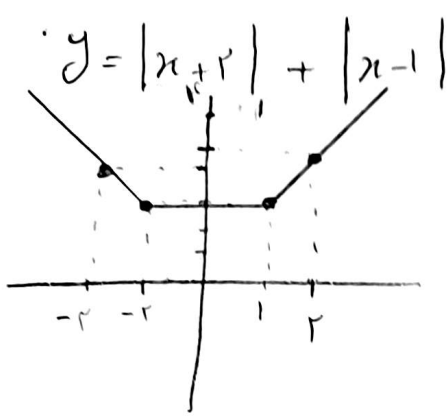
$$t-1 = -\frac{12}{3} \rightarrow t = -\frac{10}{3}$$

$$\sqrt{x+\sqrt{-x^2+4x^2+20x-120}} + \sqrt{x^2+\sqrt{-x^2+4x-1}} = x+2$$

$$x^2 - 4x^2 - 20x + 120 \leq 0 \rightarrow 4 \leq x \leq 0$$

$$(x-2)(x-4) \leq 0 \rightarrow 2 \leq x \leq 4$$

$$\rightarrow \text{النتيجة} = x=4 \rightarrow \sqrt{4} + \sqrt{14} = 4 \quad x=4$$



$$ry + x = 14$$

$$y = -\frac{1}{r}x + \frac{14}{r}$$

$$-rx - 1 = -\frac{1}{r}x + \frac{14}{r}$$

$$-rx - r = -x + 14$$

$$dx = -10 \rightarrow x = -5$$

$$A \begin{vmatrix} -r \\ 14 \end{vmatrix}$$

$$B \begin{vmatrix} 1 \\ -10 \end{vmatrix}$$

$$\sqrt{(x+c)^2 + (d-v)^2} = r\sqrt{10}$$

(r)

$$rx + 1 = -\frac{1}{r}x + \frac{14}{r}$$

$$rx + r = -x + 14$$

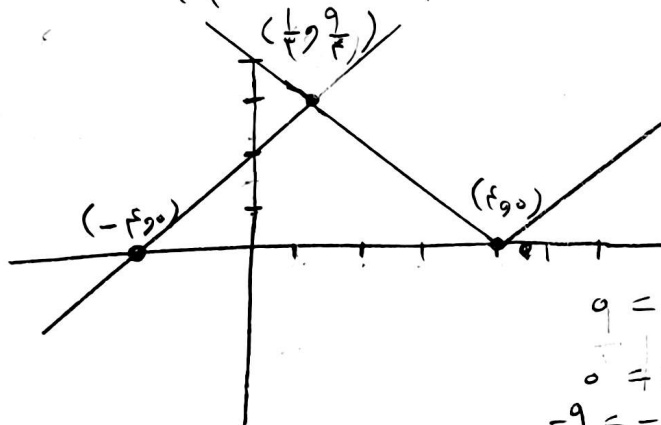
$$rx = 14$$

$$x = 5$$

$$y = \sqrt{x^2 - 8x + 17}$$

$$y = \frac{1}{r}x + r$$

$$x^2 - 8x + 17 = \frac{1}{r}x + r$$



$$x^2 - \frac{9}{r}x + r = 0$$

$$x = 8$$

$$x = \frac{1}{r}$$

$$\frac{1}{r} + r = \frac{9}{r}$$

$$\frac{9+r}{r} = \boxed{9}$$

$$9 = \frac{1}{r} \cdot \frac{9}{r} = 9$$

$$0 = 9$$

$$-9 = -9$$

$$\frac{1}{r} \cdot \frac{9}{r}$$

$$t_B = t_F - 9$$

$$\frac{1}{t_B} + \frac{1}{t_F} = \frac{1}{r_0} \quad \frac{1}{t_F - 9} + \frac{1}{t_F} = \frac{1}{r_0}$$

$$\frac{t_F - 9}{t_F - 9 + t_F} = \frac{1}{r_0}$$

$$r_0 t_F + t_F - 14 = t_F - 9 + t_F \quad \boxed{t_B = r_0} \checkmark$$

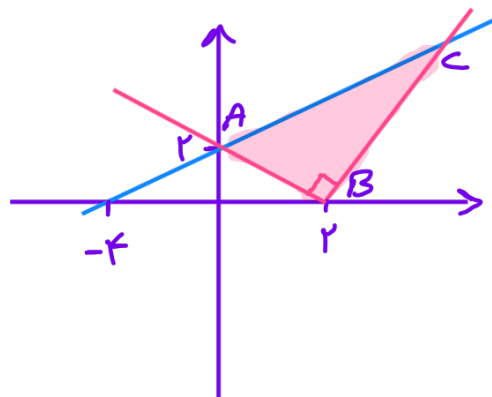
$$t_F - 9 + t_F + 14 = 0$$

$$\frac{2t_F + 5}{r} = r_0 \checkmark$$

$$y = \sqrt{x^2 - 8x + 17} = |x - 4|$$

$$x > 4 \rightarrow \frac{1}{r}x + r = x - 4$$

$$\rightarrow C(1, 4)$$



$$AB = 4\sqrt{2} \quad BC = 4\sqrt{2} \quad S = \frac{4\sqrt{2} \times 4\sqrt{2}}{2} = \boxed{16}$$