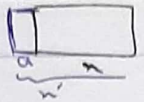
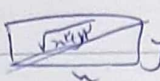


Date

No

1- $\frac{n}{y} = \frac{a}{r}$  $\rightarrow S = ny$ $S' = n'y'$
 $\rightarrow \frac{n'}{y} = \frac{1+\sqrt{a}}{r} \rightarrow n' = \frac{(1+\sqrt{a})y}{r}$ $\frac{S'}{S} = \frac{n'y'}{ny} = \frac{n'}{n} = \frac{(1+\sqrt{a})y}{ay} = \frac{r+\sqrt{a}}{a}$

2-  $\frac{\sqrt{n'y'}}{n} = 1.411 \rightarrow \frac{n'y'}{n^2} = \frac{(1.411)^2}{1+\sqrt{a}} \rightarrow \frac{1+y'}{n^2} = \frac{r+\sqrt{a}}{r}$
 $\Rightarrow \frac{y'}{n^2} = \frac{1+\sqrt{a}}{r} \rightarrow \frac{n^2}{y^2} = \frac{r}{1+\sqrt{a}} \cdot \frac{-1+\sqrt{a}}{-1+\sqrt{a}} = \frac{r\sqrt{a}-r}{r} = \frac{\sqrt{a}-1}{r}$

3- $\sqrt{r^2+a} = r-ka \rightarrow r-ka \geq 0 \rightarrow a \leq \frac{r}{k}$
 $ra+ka = r+9a^2 - 14a \rightarrow ra^2 - 14a + r = 0 \rightarrow a = \frac{14 \pm \sqrt{196-4r^2}}{2r}$ $\left\{ \begin{array}{l} a = \frac{r}{18} = \frac{r}{v} \\ a = r \cdot 0.05 \end{array} \right.$
 $\rightarrow \frac{a+1}{a} = \frac{\frac{r}{v} + 1}{\frac{r}{v}} = \frac{r+a}{r}$

4- $n > 1$ $n \neq 1$ $\sqrt{n-1} = t \rightarrow \frac{\sqrt{n+1}}{t+r} - \frac{\sqrt{n+1}}{-t+r} = \frac{t^2}{t}$
 $\rightarrow \frac{-t\sqrt{n+1} + \sqrt{n+1}}{t^2 - r^2} = \frac{t^2}{t} \rightarrow \frac{-t\sqrt{n+1} + \sqrt{n+1}}{-n+1} = \frac{t^2}{t}$
 $\Rightarrow \frac{-r\sqrt{n-1} \times \sqrt{n+1}}{-n+1} = \frac{1}{\sqrt{n-1}} \rightarrow -r\sqrt{n+1} = 10-n \rightarrow r^2+n+r = n^2-r^2n+100$
 $\rightarrow n^2-r^2n+94=0 \rightarrow n = \frac{r^2 \pm \sqrt{r^4-4 \cdot 94}}{2} \Rightarrow n = \frac{r^2 \pm \sqrt{r^4-376}}{2}$

5- $\sqrt{r-n} = t \rightarrow n \leq r, n \neq \pm r$
 $\frac{1}{t+r} - \frac{1}{r-t} = \frac{t}{a} \rightarrow \frac{r-t-t-r}{r^2-n} = \frac{\sqrt{r-n}}{a} \rightarrow \frac{-r\sqrt{r-n}}{r^2-n} = \frac{\sqrt{r-n}}{a} \rightarrow r+n = -10 \Rightarrow n = -14$

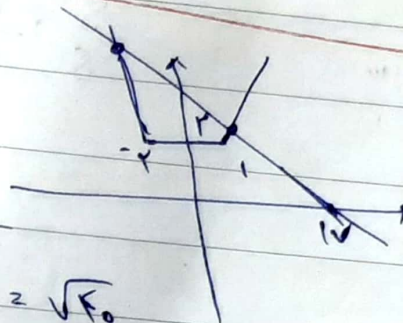
6- $\frac{n^2+n^2-rn+1}{n^2(1-n)^2} = \frac{140}{9} \rightarrow \frac{2n^2-rn+1}{n^2(1-n)^2} = \frac{1-rn(1-n)}{n^2(1-n)^2} \rightarrow \frac{1-rn(1-n)}{n^2(1-n)^2} = \frac{140}{9}$
 $n \neq 0, 1 \rightarrow 9(1-rn) = 140n^2 \rightarrow 140n^2 + rn - 9 = 0 \rightarrow \begin{cases} (1) \quad t^2 + 14t - 9 \times 140 = 0 \\ (2) \quad t = \frac{r}{10} \rightarrow -n^2 + n - \frac{r}{10} = 0 \end{cases}$
 $\rightarrow \frac{1}{-1} + \frac{1}{-1} = 2 \rightarrow r$

V-

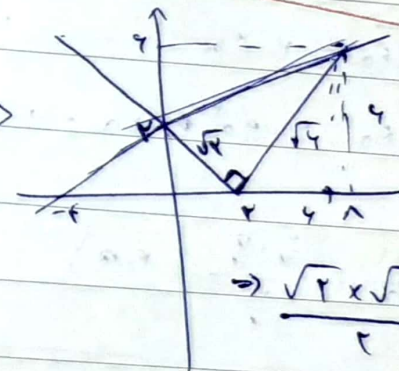
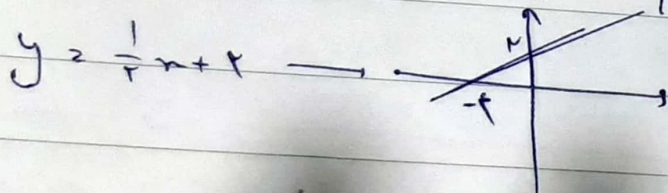
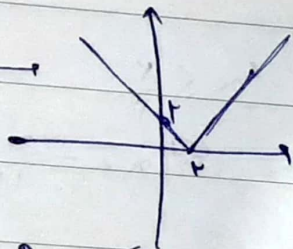
$$8- y = \frac{14-n}{r} \quad y = \frac{|n+r| + |n-1|}{r}$$

$$14-n = r|n+r| + r|n-1|$$

$$\begin{cases} r & | -r \\ 0 & r \end{cases} \rightarrow \sqrt{r^4 + r} = \sqrt{r_0}$$



$$9- y = \sqrt{(n-r)^2} = |n-r| \rightarrow$$



$$\Rightarrow \frac{\sqrt{r} \times \sqrt{r}}{r} = \frac{\sqrt{r}}{r}$$

$$10- \frac{1}{B} + \frac{1}{B+9} = \frac{1}{r_0} \rightarrow \frac{B+B+9}{B^2+9B} = \frac{1}{r_0} \Rightarrow r_0 B + 11 = B^2 + 9B$$

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$$\begin{cases} B^2 - r_0 B + 11 = 0 \end{cases} \Rightarrow B = \frac{r_0 \pm \sqrt{r_0^2 - 44}}{2}$$