$x+y = cx^2$ — (1) $\Rightarrow$ $\frac{x}{x^2} + \frac{y}{x^2} = c$.

and given that $\tan\alpha = 2$

Now diff. eq^n (1) with respect to 'x'

$1+\frac{dy}{dx} = 2cx$ $\quad\quad$ $\frac{1}{x} + \frac{y}{x^2} = c$

$\frac{dy}{dx} =$ $\quad\quad$ $-\frac{1}{x^2} + \frac{x^2\frac{dy}{dx} - y\cdot 2x}{x^4} = 0$

$$\frac{-x^2 + x^2\frac{dy}{dx} - 2xy}{x^4} = 0$$

$$x^2\frac{dy}{dx} - 2xy - x^2 = 0$$

$$x^2\frac{dy}{dx} = 2xy + x^2$$

$$\frac{dy}{dx} = \frac{2xy+x^2}{x^2} = 1+\frac{2y}{x}$$

$$\boxed{\frac{dy}{dx} = 1+\frac{2y}{x}}$$

$$\boxed{P = \frac{dy}{dx} = 1+\frac{2y}{x}} \quad \text{— (2)}$$

in eq^n (2) we replace p by $\frac{p+\tan\alpha}{1-p\tan\alpha}$

$$\frac{p+\tan\alpha}{1-p\tan\alpha} = 1+\frac{2y}{x}$$

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

$$px + 2x = (x+2y)(1-2p)$$

$$px + 2x = x+2y - 2p(x+2y)$$

$$px + 2x = x+2y-2px-4py$$

$$px + 2px + 4py = x+2y-2x$$

$$3px + 4py = 2y-x$$

$$p(3x+4y) = 2y-x$$

$$p = \frac{2y-x}{3x+4y} = \frac{2y-x}{4y+3x}$$

$$\frac{dy}{dx} = \frac{2y-x}{4y+3x} \quad \text{---} \; (3)$$

Now we put $y = vx$

$$\frac{dy}{dx} = v + x\frac{dv}{dx}$$

put the value of $y, \frac{dy}{dx}$ in (3)

$$v + x\frac{dv}{dx} = \frac{2vx-x}{4vx+3x} = \frac{2v-1}{4v+3}$$

$$x\frac{dv}{dx} = \frac{2v-1}{4v+3} - v = \frac{2v-1-4v^2-3v}{4v+3}$$

$$x\frac{dv}{dx} = -\frac{(1+v+4v^2)}{4v+3}$$

$$\frac{(4v+3)\,dv}{4v^2+v+1} = -\frac{dx}{x}$$

$$\int \frac{4v+3}{4v^2+v+1}\, dv = -\int \frac{dx}{x}$$

$$\frac{1}{2}\ln|64v^2+16v+16| + \sqrt{\frac{5}{3}}\tan^{-1}\left(\frac{1}{\sqrt{15}}(8v+1)\right) = -\log x + \log c$$

$$\frac{1}{2}\ln(64v^2+16v+16) + \sqrt{\frac{5}{3}}\tan^{-1}\left(\frac{1}{\sqrt{15}}(8v+1)\right) = \log\frac{c}{x}$$

put value of 'v'

$$\frac{1}{2}\ln\left(64\left(\frac{y}{x}\right)^2+16\left(\frac{y}{x}\right)+16\right) + \sqrt{\frac{5}{3}}\tan^{-1}\left(\frac{1}{\sqrt{15}}\left(8\frac{y}{x}+1\right)\right) = \log\frac{c}{x}$$

Hence above expression is family of oblique trajectary.