YOU CAN'T HAVE
A BETTER
TOMORROW IF YOU'RE
STILL THINKING
ABOUT
YESTERDAY.

Lucky Jethani

Teaches in IIT JEE

IITIAN Gate AIR 46 in 2012 6+ yrs of teaching experience Ex Hod Fiitjee Ltd. produced top 50 rank 3 times REF CODE MLJSIRLIVE

5M Watch mins | **1M** Watch mins (last 30 days) | **5k** Followers | **795** Dedications

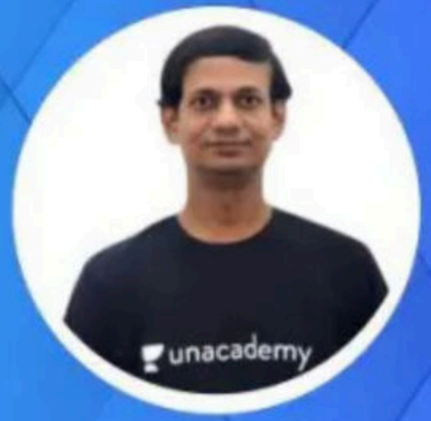
REF CODE :- MLJSIRLIVE

unacademy

MCQ BATCH

JEE MAIN AND ADVANCED 2021

HK ARJARIA



VINOD KUMAR SHARMA

PARAG KIRAR

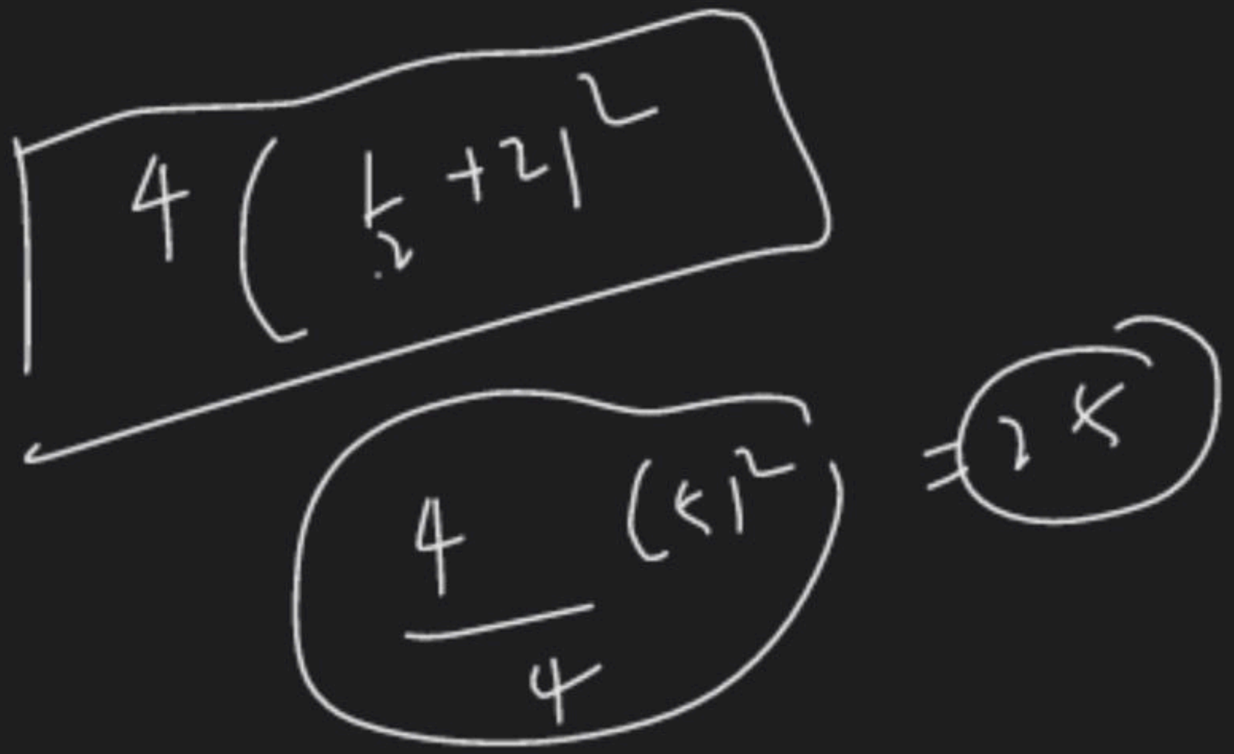
LUCKY JETHANI

STARTS ON 21st DEC

If one end of a focal chord of the parabola, $y^2 = 16x$ is at $(1, 4)$, then the length of this focal chord is

[JEE Main 2019, 9 April Shift-I]

(a) 22 (b) 25 (c) 24 (d) 20



Q)

The equation of a common tangent to the curves, $y^2 = 16x$ and $xy = -4$, is

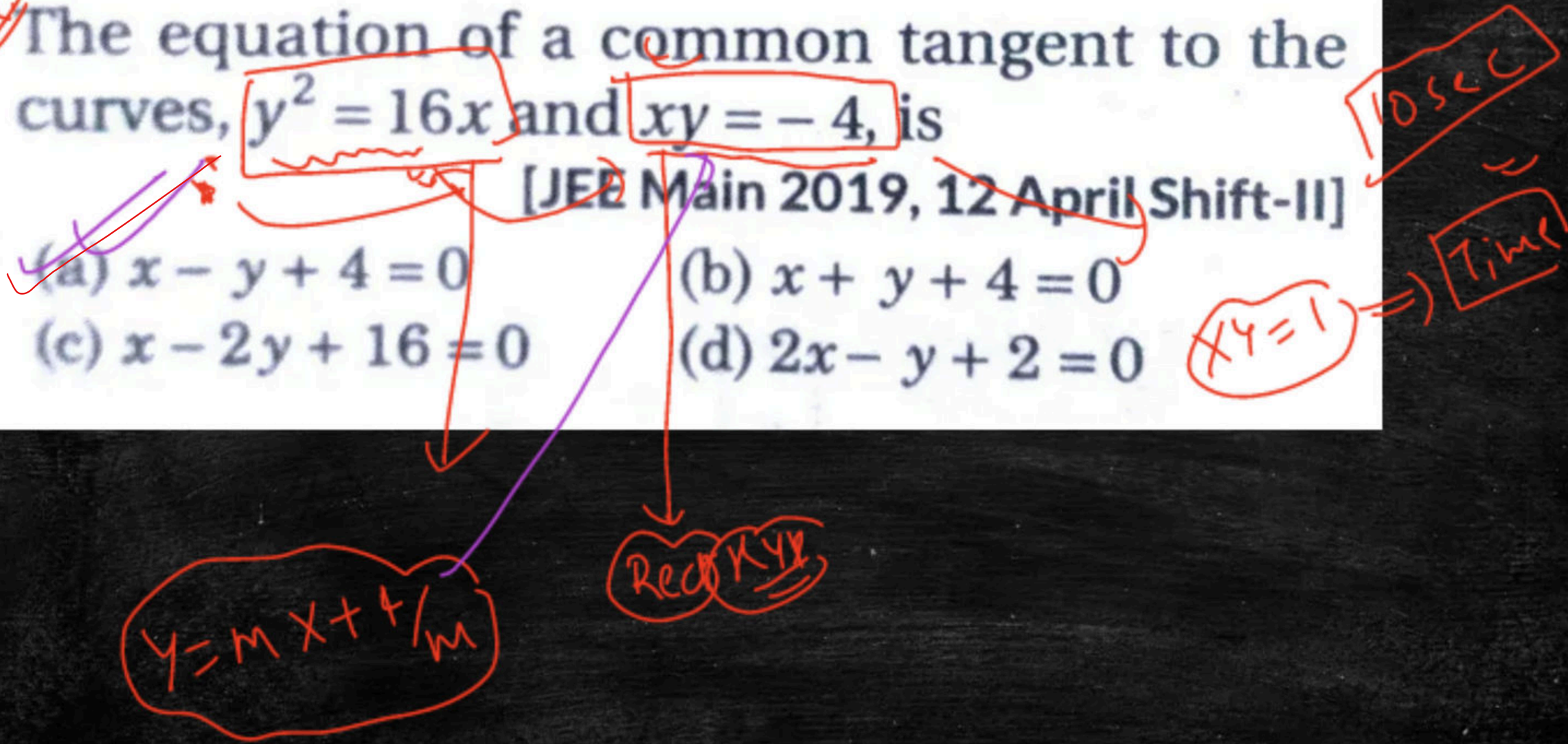
[JEE Main 2019, 12 April Shift-II]

(a) $x - y + 4 = 0$

(b) $x + y + 4 = 0$

(c) $x - 2y + 16 = 0$

(d) $2x - y + 2 = 0$



$$X\left(mX + \frac{4}{m}\right) = -4$$

$m = 1$

$$mX^2 + \frac{4}{m}X + 4 =>$$

$$\left(\frac{4}{m}\right)^2 - 4(4)m =>$$

- Equation of a common tangent to the circle, $x^2 + y^2 - 6x = 0$ and the parabola, $y^2 = 4x$, is

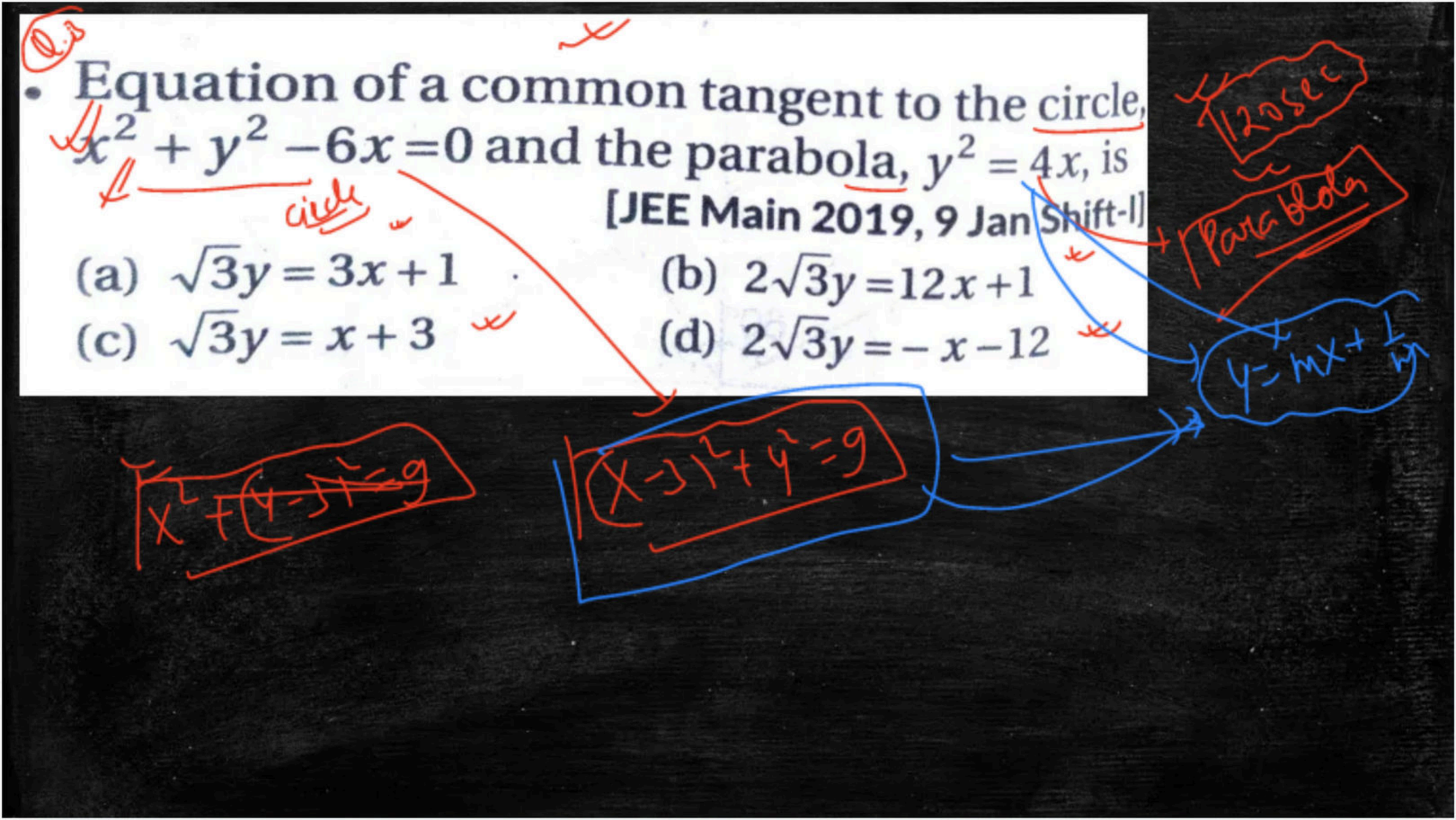
[JEE Main 2019, 9 Jan Shift-I]

(a) $\sqrt{3}y = 3x + 1$

(b) $2\sqrt{3}y = 12x + 1$

(c) $\sqrt{3}y = x + 3$

(d) $2\sqrt{3}y = -x - 12$



$x^2 + y^2 = a^2$

$(x-3)^2 + y^2 = 9$

$y = mx \pm a\sqrt{1+m^2}$

$y = m(x-3) \pm 3\sqrt{1+m^2}$

$-3m \pm 3\sqrt{1+m^2} = y_m$

$C\ (3, 0)$ $R = 3$

$$\left| \frac{3m + \frac{1}{m}}{\sqrt{1+m^2}} \right| = 3$$

← circle

$3 \cdot \ldots$

n

The length of the chord of the parabola $x^2 = 4y$ having equation $x - \sqrt{2}y + 4\sqrt{2} = 0$ is

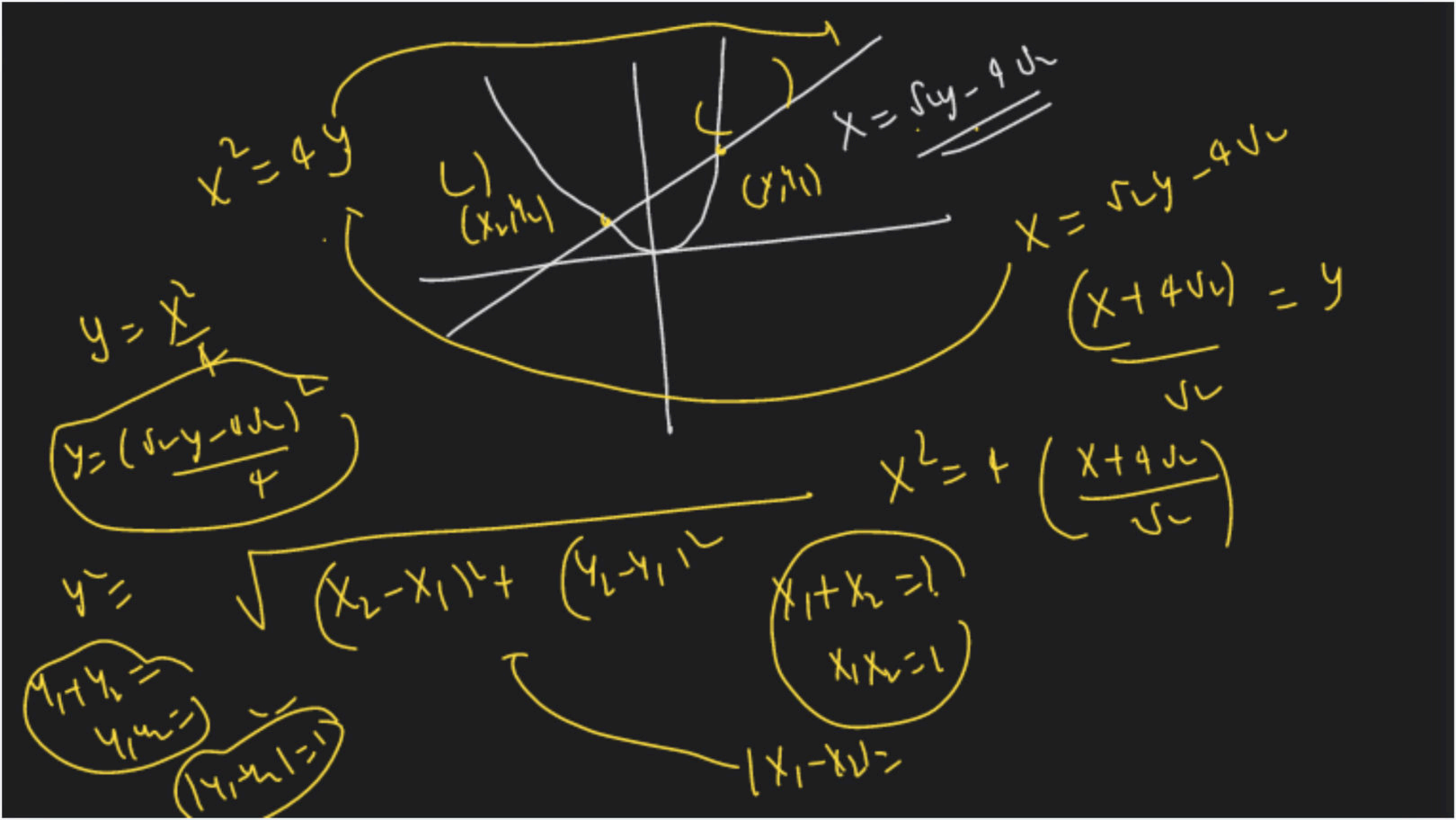
[JEE Main 2019, 10 Jan Shift-II]

(a) $8\sqrt{2}$ (b) $2\sqrt{11}$ (c) $3\sqrt{2}$ (d) $6\sqrt{3}$

The length of the chord of the parabola $x^2 = 4y$ having equation $x - \sqrt{2}y + 4\sqrt{2} = 0$ is

[JEE Main 2019, 10 Jan Shift-II]

(a) $8\sqrt{2}$ (b) $2\sqrt{11}$ (c) $3\sqrt{2}$ (d) $6\sqrt{3}$


$x^2 = 4y$
$x = \sqrt{2}y - 4\sqrt{2}$
(x_1, y_1)
(x_2, y_2)
$y = x^2$
$y = \left(\frac{\sqrt{2}y - 4\sqrt{2}}{4}\right)^2$
$x = \sqrt{2}y - 4\sqrt{2}$
$\left(\frac{x + 4\sqrt{2}}{\sqrt{2}}\right) = y$
$x^2 = 4\left(\frac{x + 4\sqrt{2}}{\sqrt{2}}\right)$
$y =$
$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
$x_1 + x_2 = 4$
$x_1 x_2 = 1$
$y_1 + y_2 =$
$y_1 y_2 =$
$|x_1 - x_2| =$
$|y_1 - y_2| =$

• Let $P(4,-4)$ and $Q(9,6)$ be two points on the parabola, $y^2 = 4x$ and let X be any point on the arc POQ of this parabola, where O is the vertex of this parabola, such that the area of ΔPXQ is maximum. Then, this maximum area (in sq units) is

[JEE Main 2019, 12 Jan Shift-I]

(a) $\frac{125}{2}$ (b) $\frac{75}{2}$ (c) $\frac{625}{4}$ (d) $\frac{125}{4}$

$$\Delta = \frac{1}{2}\begin{vmatrix} t^2 & 2t & 1 \\ 4 & -4 & 1 \\ 9 & 6 & 1 \end{vmatrix}$$

$$\Delta = \frac{1}{2}\left(t^2(-10) + 2t(-5) + 5t\right)$$

$$\Delta = \left(-5t^2 + 5t + 26\right)$$

$-10t + 5 = 0$

$t = 1$

Δ max

Q.1

Let O be the vertex and Q be any point on the parabola $x^2 = 8y$. If the point P divides the line segment OQ internally in the ratio $1:3$, then the locus of P is

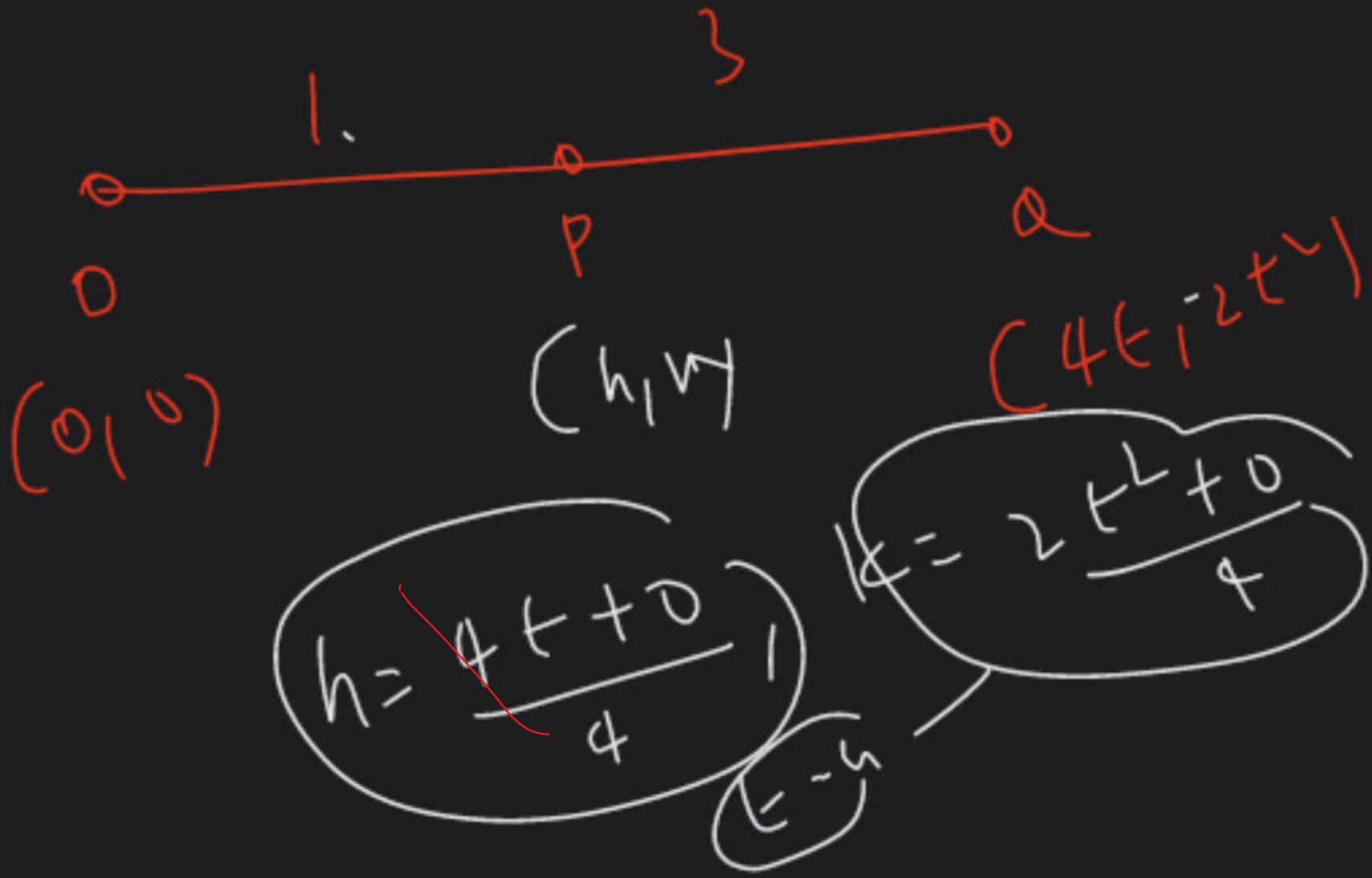
[JEE Main 2015]

(a) $x^2 = y$

(b) $y^2 = x$

(c) $y^2 = 2x$

(d) $x^2 = 2y$


1.
3
O
P
Q
(0,0)
(h,k)
(4t²+2t+1)
h = 4t+0 / 4
k = 2t²+0 / 4
t = k

. The slope of the line touching both the parabolas $y^2 = 4x$ and $x^2 = -32y$ is

[JEE Main 2014]

(a) $\frac{1}{2}$ (b) $\frac{3}{2}$ (c) $\frac{1}{8}$ (d) $\frac{2}{3}$

90 sec

Repeated

$C = \frac{1}{m}$

$C = 8m^2$

$m^3 = \frac{1}{8}$ $m = \frac{1}{2}$

$\frac{1}{m} = 8m^2$

If two tangents drawn from a point P to the parabola $y^2 = 4x$ are at right angles, then the locus of P is [AIEEE 2010]

(a) $x = 1$

(b) $2x + 1 = 0$

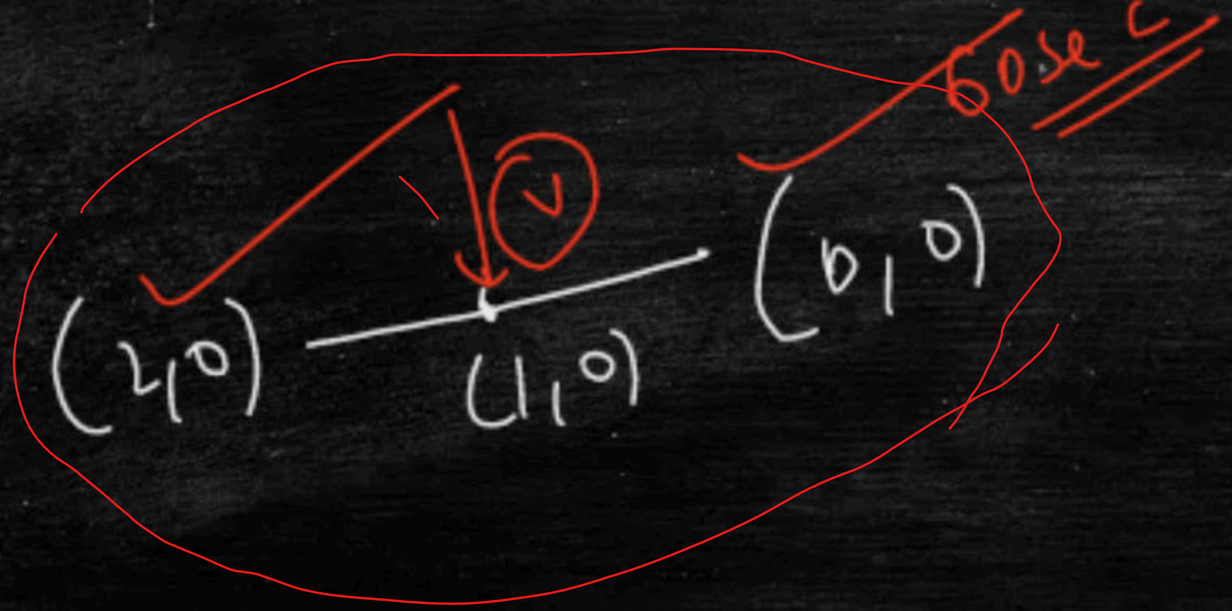
(c) $x = -1$

(d) $2x - 1 = 0$

Q.9

A parabola has the origin as its focus and the line $x = 2$ as the directrix. Then, the vertex of the parabola is at [AIEEE 2008]

(a) (2, 0) (b) (0, 2) (c) (1, 0) (d) (0, 1)



Let PQ be a focal chord of the parabola $y^2 = 4ax$. The tangents to the parabola at P and Q meet at a point lying on the line $y = 2x + a$, $a > 0$.

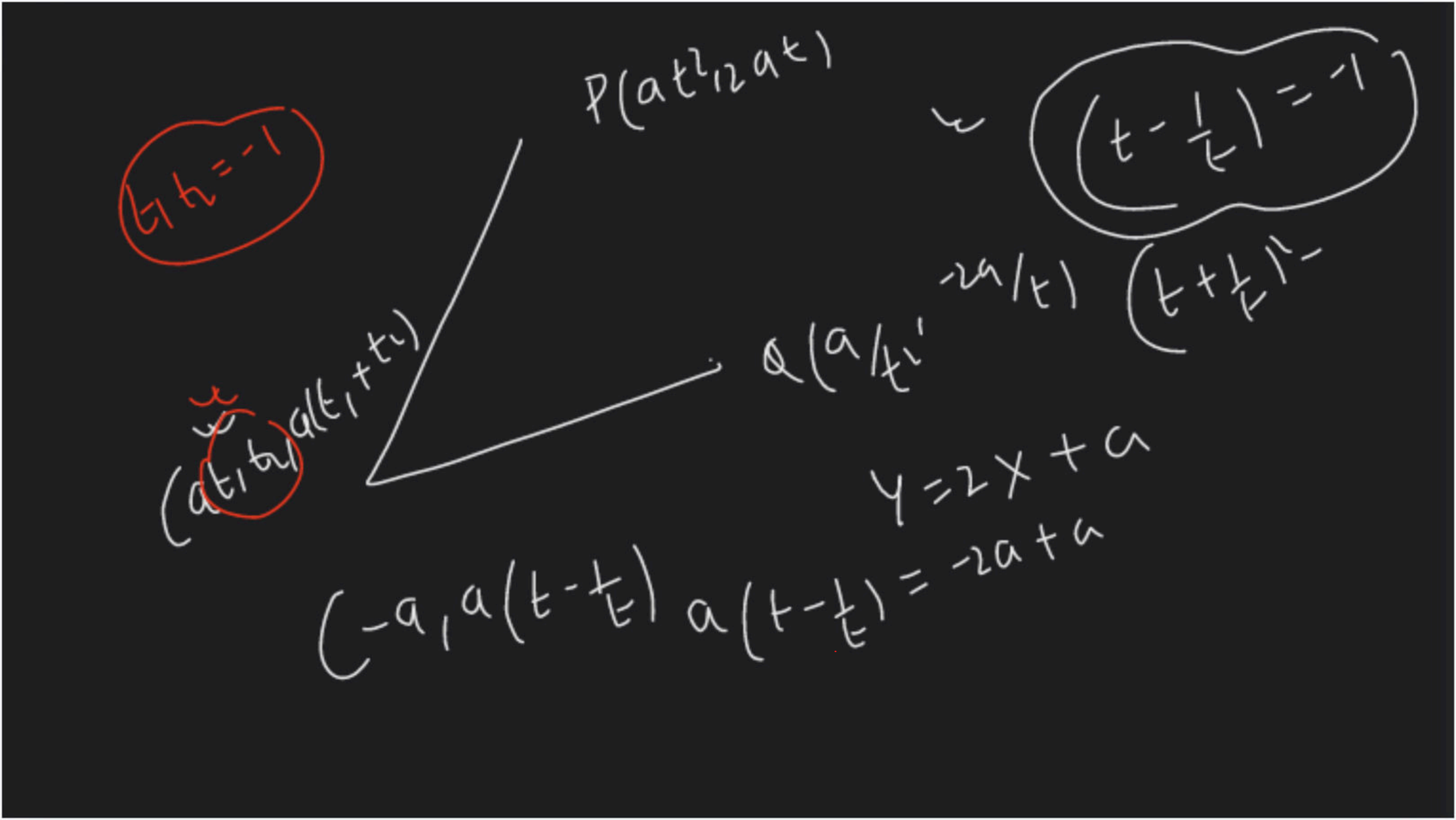
Length of chord PQ is

(A) 7a

(B) 5a

(C) 2a

(D) 3a


$t_1 t_2 = -1$
$P(at^2, 2at)$
$\Leftrightarrow$
$(t - \frac{1}{t}) = -1$
$(t + \frac{1}{t})^2 =$
$-2a/t)$
$Q(a/t^2$
$a(t_1 + t_2)$
$(at_1 t_2)$
$y = 2x + a$
$(-a, a(t - \frac{1}{t})$
$a(t - \frac{1}{t}) = -2a + a$

Let PQ be a focal chord of the parabola $y^2 = 4ax$. The tangents to the parabola at P and Q meet at a point lying on the line $y = 2x + a$, $a > 0$.

If chord PQ subtends an angle θ at the vertex of $y^2 = 4ax$, then $\tan\theta =$

(A) $\frac{2}{3}\sqrt{7}$

(B) $\frac{-2}{3}\sqrt{7}$

(C) $\frac{2}{3}\sqrt{5}$

(D) $\frac{-2}{3}\sqrt{5}$

Let a, r, s, t be non-zero real numbers. Let $P(at^2, 2at)$, Q, $R(ar^2, 2ar)$ and $S(as^2, 2as)$ be distinct points on the parabola $y^2 = 4ax$. Suppose that PQ is the focal chord and lines QR and PK are parallel, where K is the point $(2a, 0)$.

The value of r is

(A) $-\frac{1}{t}$

(B) $\frac{t^2+1}{t}$

(C) $\frac{1}{t}$

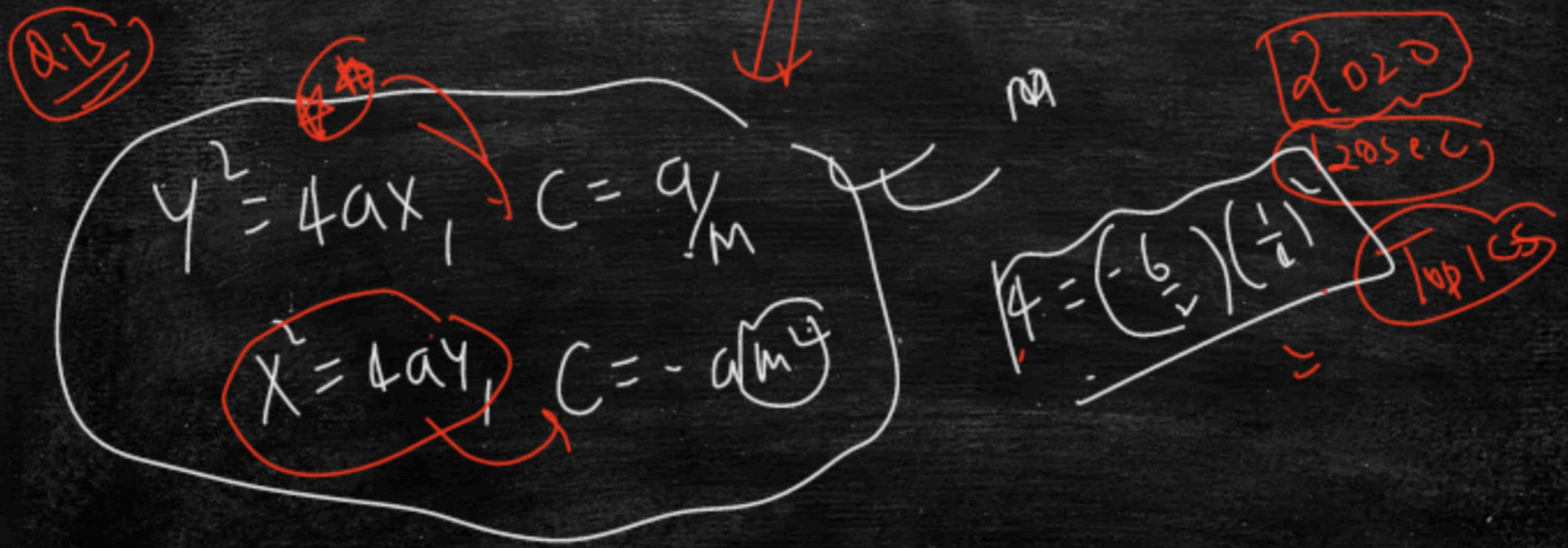
(D) $\frac{t^2-1}{t}$

$Q\left(a/t^2, \frac{2a}{t}\right)$

If $y = mx + 4$ is common tangent to parabolas $y^2 = 4x$ and $x^2 = 2by$. Then value of b is

यदि $y = mx + 4$ परवलय $y^2 = 4x$ तथा $x^2 = 2by$ की उभयनिष्ठ स्पर्श रेखा है तो b का मान है–

(1) –64 (2) –32 (3) –128 (4) 16



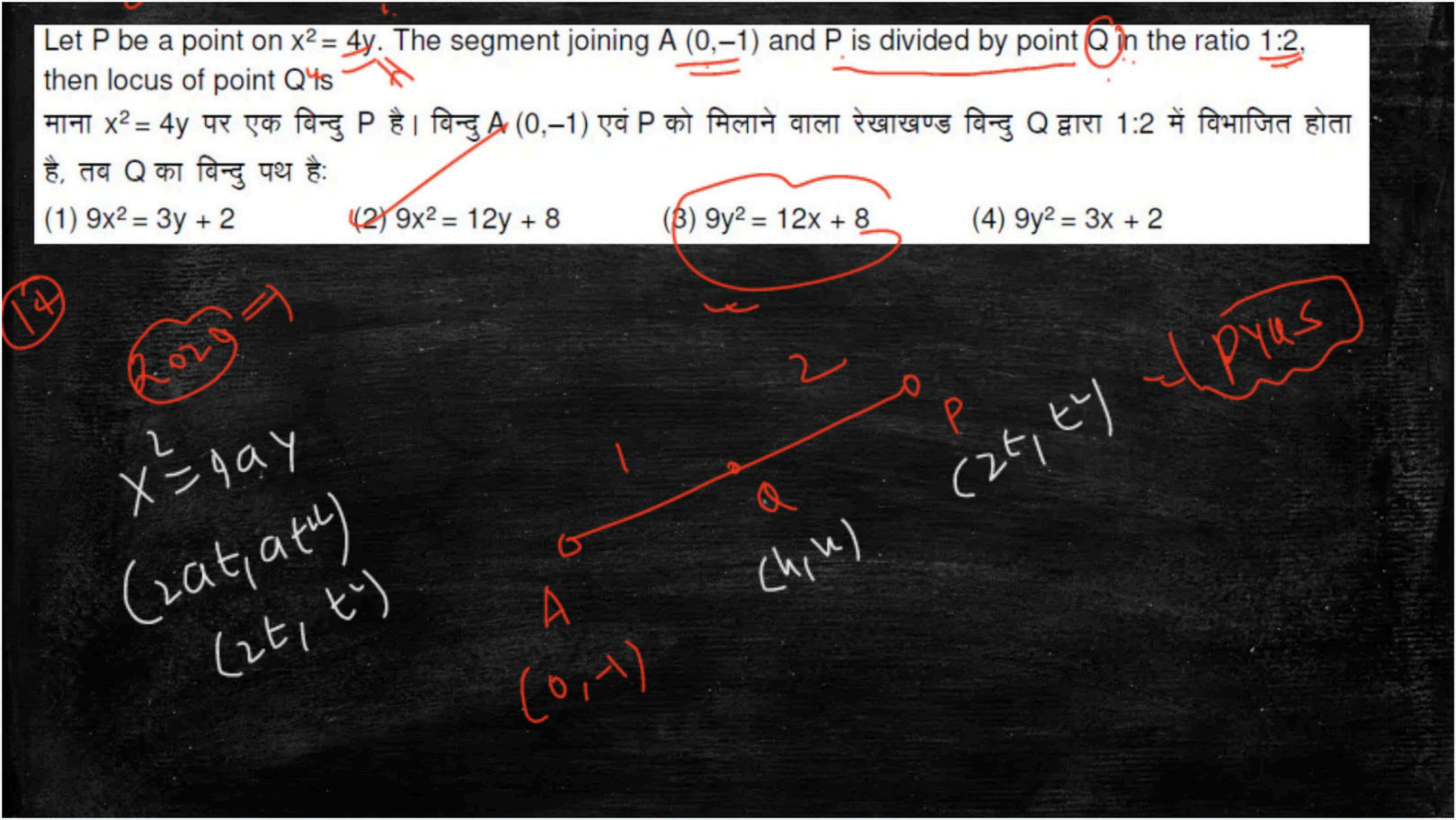
$$q = \frac{1}{m}$$

$$m = 1/q$$

Let P be a point on $x^2 = 4y$. The segment joining A (0,–1) and P is divided by point Q in the ratio 1:2, then locus of point Q is

माना $x^2 = 4y$ पर एक बिन्दु P है। बिन्दु A (0,–1) एवं P को मिलाने वाला रेखाखण्ड बिन्दु Q द्वारा 1:2 में विभाजित होता है, तब Q का बिन्दु पथ है:

(1) $9x^2 = 3y + 2$ (2) $9x^2 = 12y + 8$ (3) $9y^2 = 12x + 8$ (4) $9y^2 = 3x + 2$



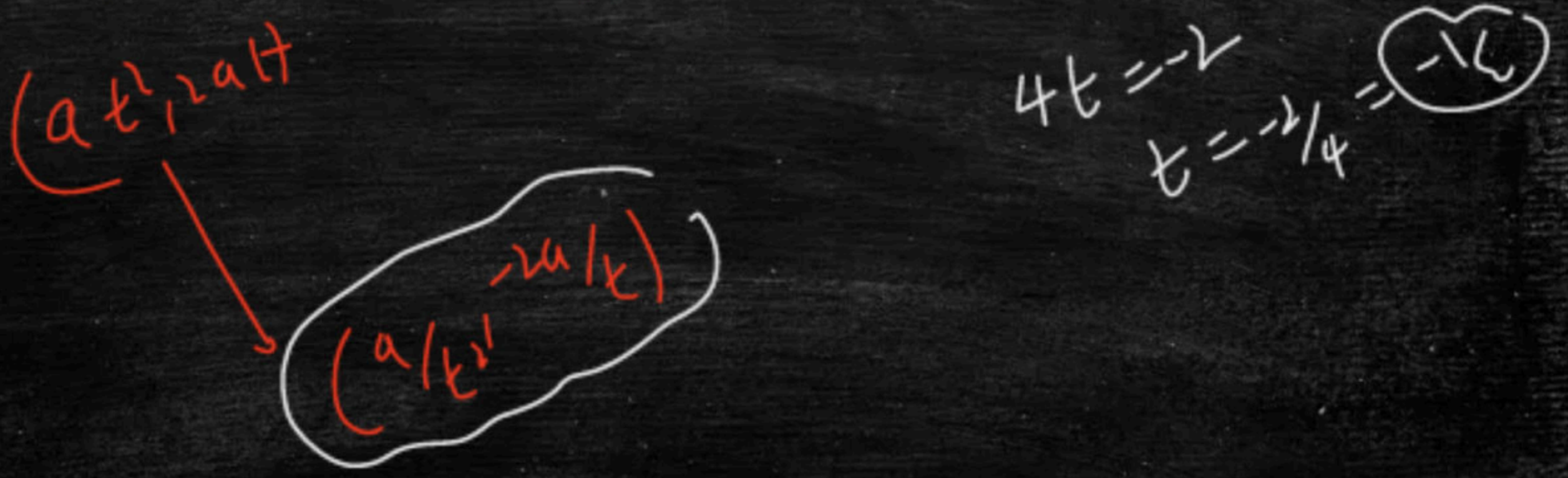
$$h = \frac{2t + 0}{2} \quad | \quad k = \frac{t^2 - 2}{3}$$

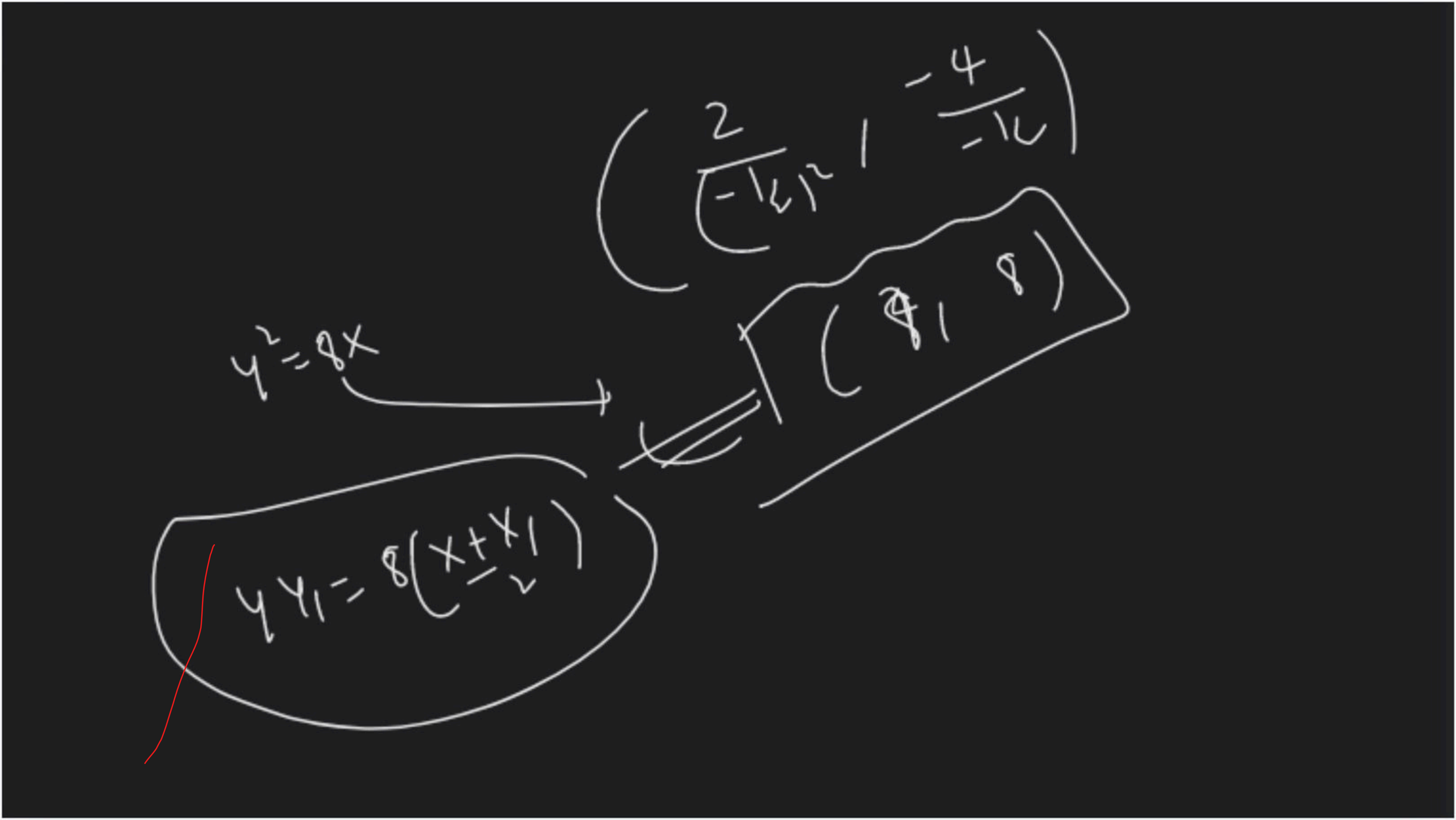
5.

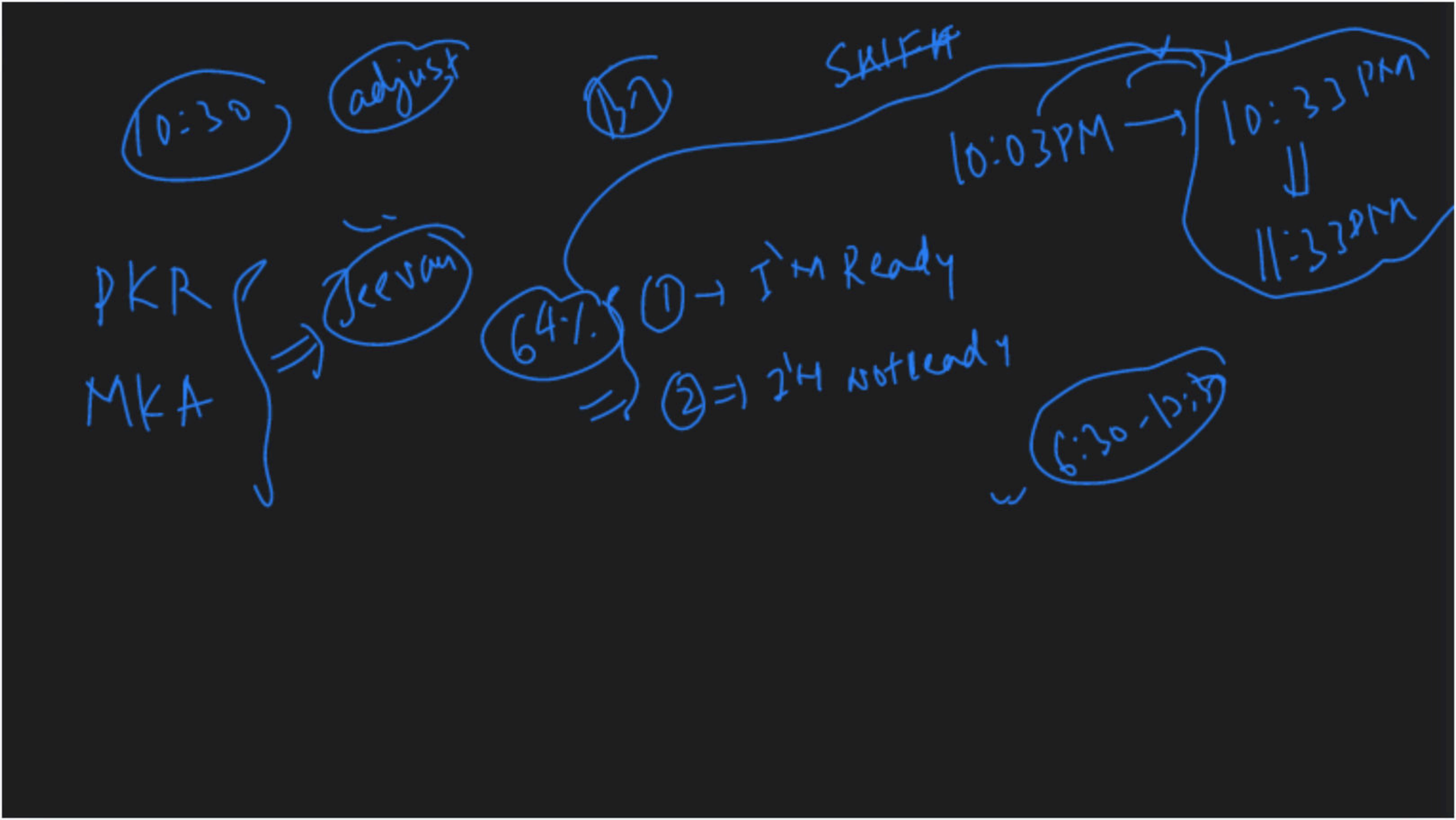
Let one end of focal chord of parabola $y^2 = 8x$ is $\left(\frac{1}{2}, -2\right)$, then equation of tangent at other end of this focal chord is

माना परवलय $y^2 = 8x$ की नाभिय जीवा के एक सिरे के निर्देशांक $\left(\frac{1}{2}, -2\right)$ है, तो दूसरे सिरे पर खींची गई स्पर्श रेखा का समीकरण ज्ञात कीजिये।

(1) $x + 2y + 8 = 0$ (2) $x + 2y = 8$ (3) $x - 2y = 8$ (4) $x - 2y + 8 = 0$




$y^2 = 8x$
$yy_1 = 8\left(\frac{x+x_1}{2}\right)$
$\left(\frac{2}{-12}, 1, \frac{-4}{-12}\right)$
$(9, 8)$


10:30
adjust
SELF
10:03PM
10:33 PM
11:33PM
PKR
MKA
Jeevan
64.1
① → I'M Ready
② → I'M not ready
6:30 - 12:30