Find the equation of the ellipse where the sum of the distances from $\mathrm{F}(-c,0)$ and $\mathrm{F}'(-c,0)$ is $2a$.

두 초점 $\mathrm{F}(c,0)$ 이고 $\mathrm{F}'(-c,0)$ 으로부터 거리의 합이 $2a$인 타원의 방정식을 구하여라.

(Find the equation of the ellipse where the sum of the distances from $\mathrm{F}(-c,0)$ and $\mathrm{F}'(-c,0)$ is $2a$.)

Find the equation of the ellipse where the sum of the distances from $\mathrm{F}(-c, 0)$ and $\mathrm{F}'(-c, 0)$ is $2a$.

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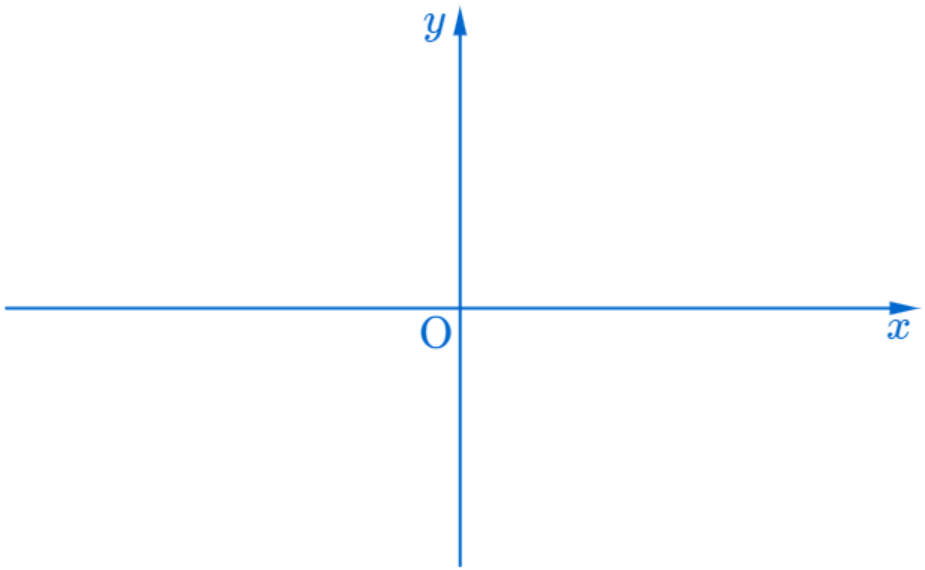

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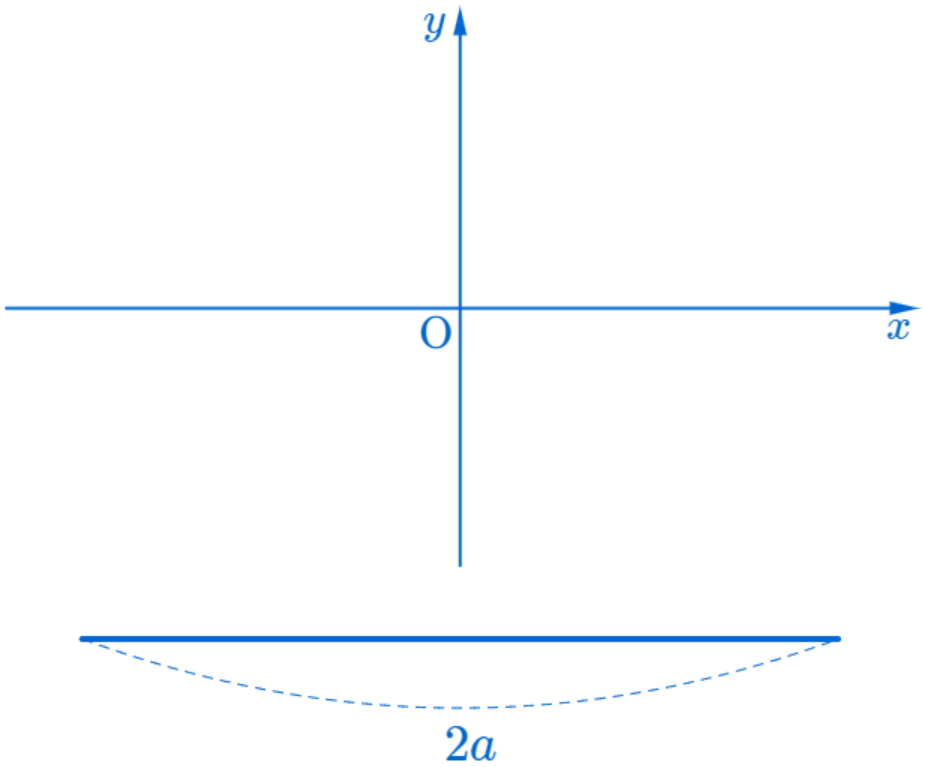

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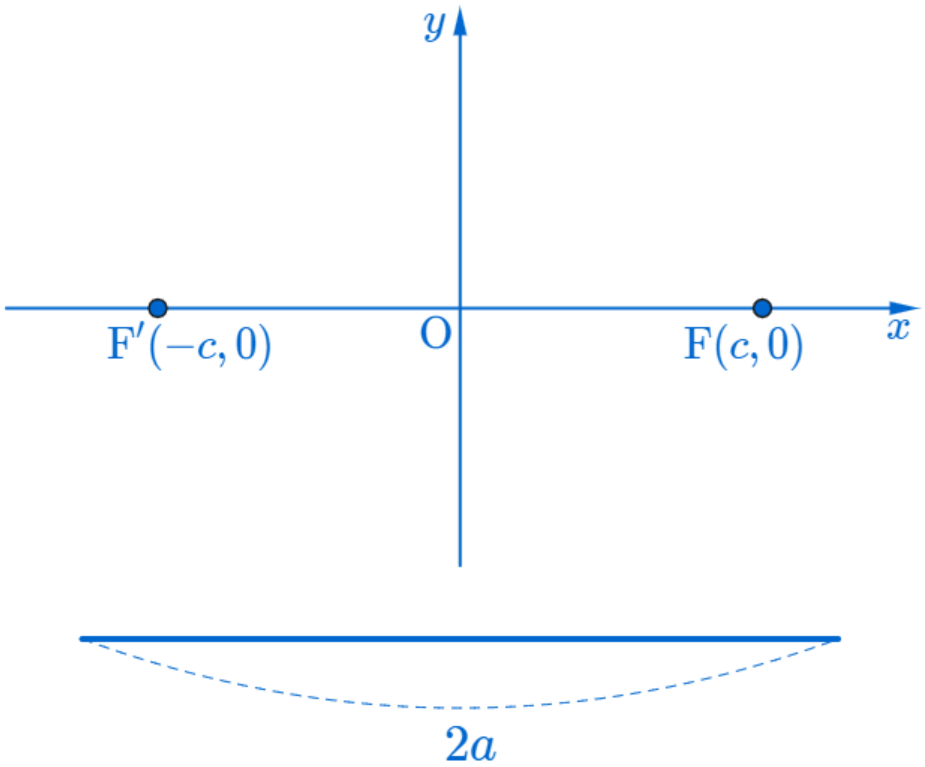

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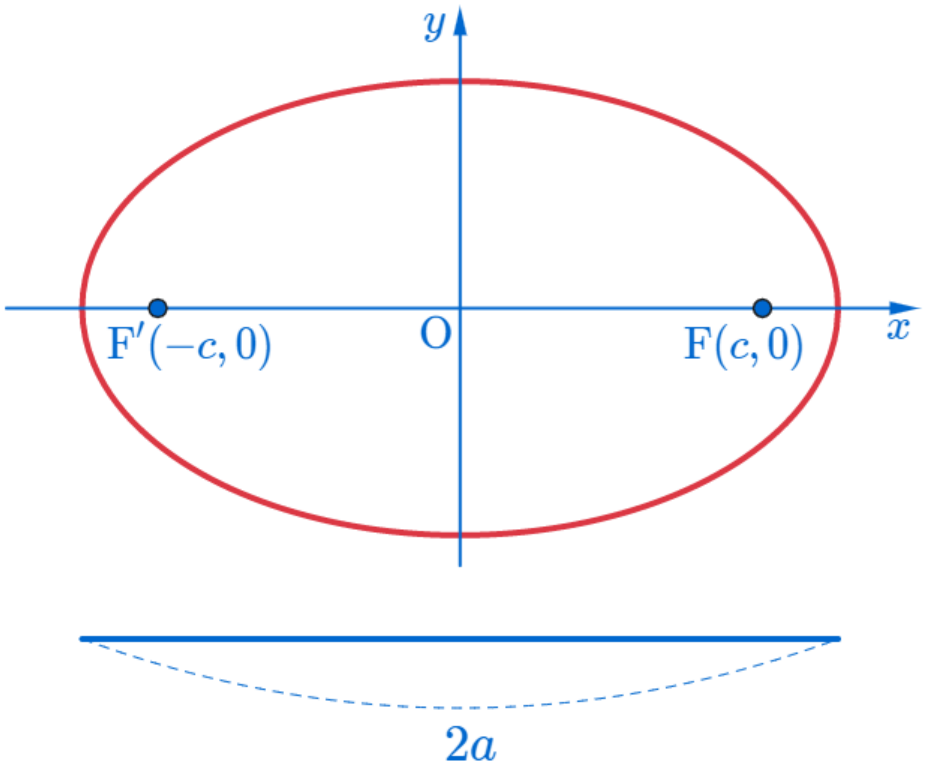

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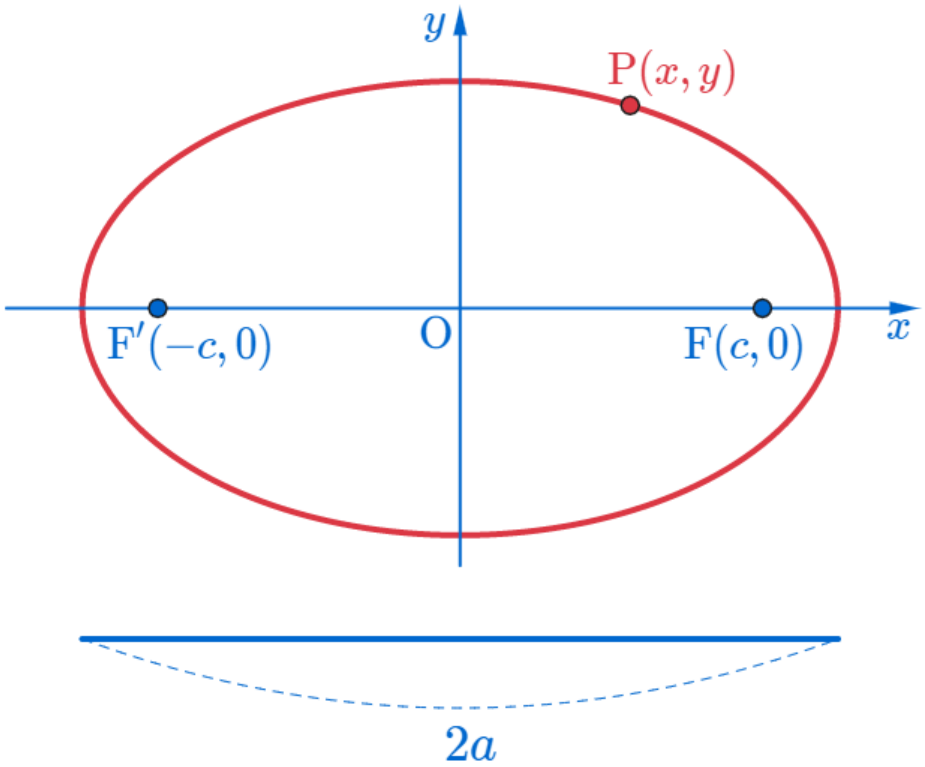

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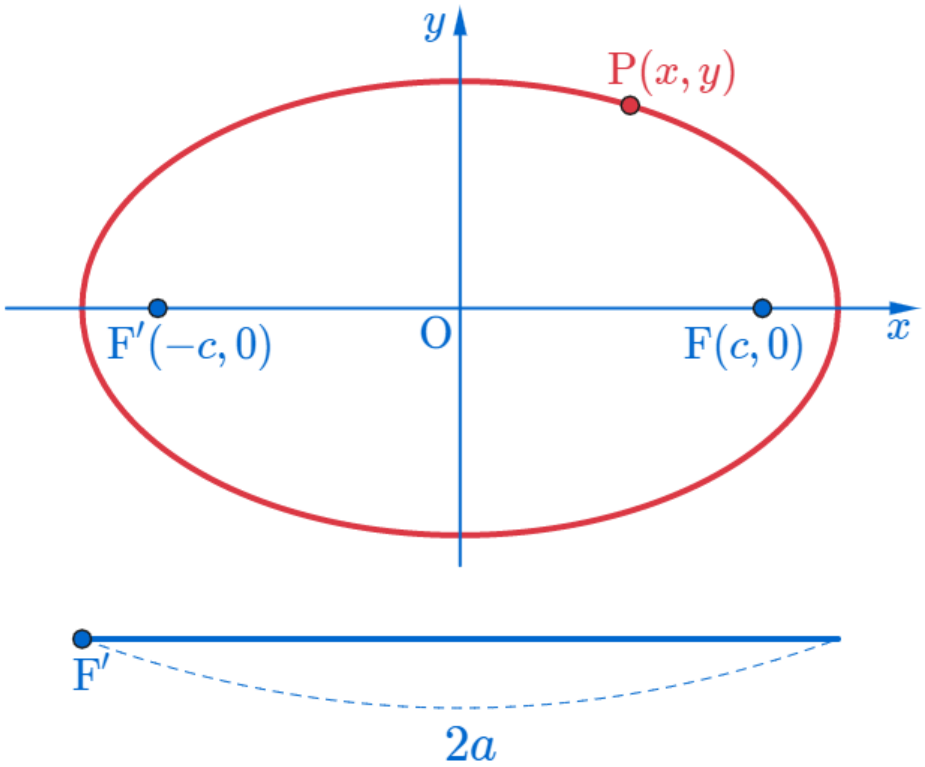

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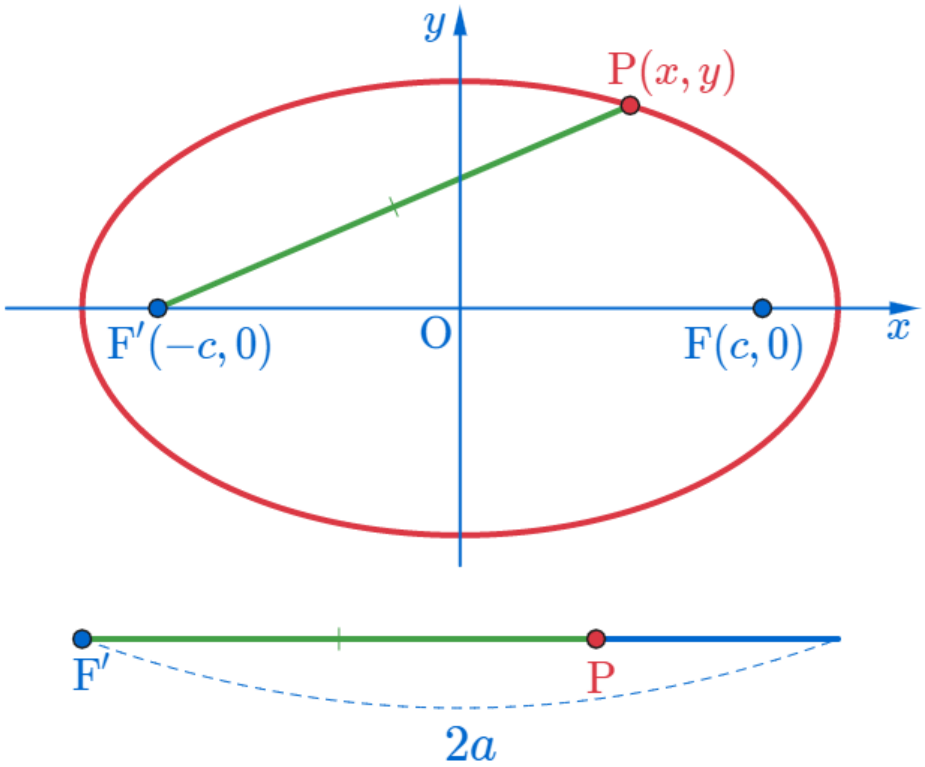

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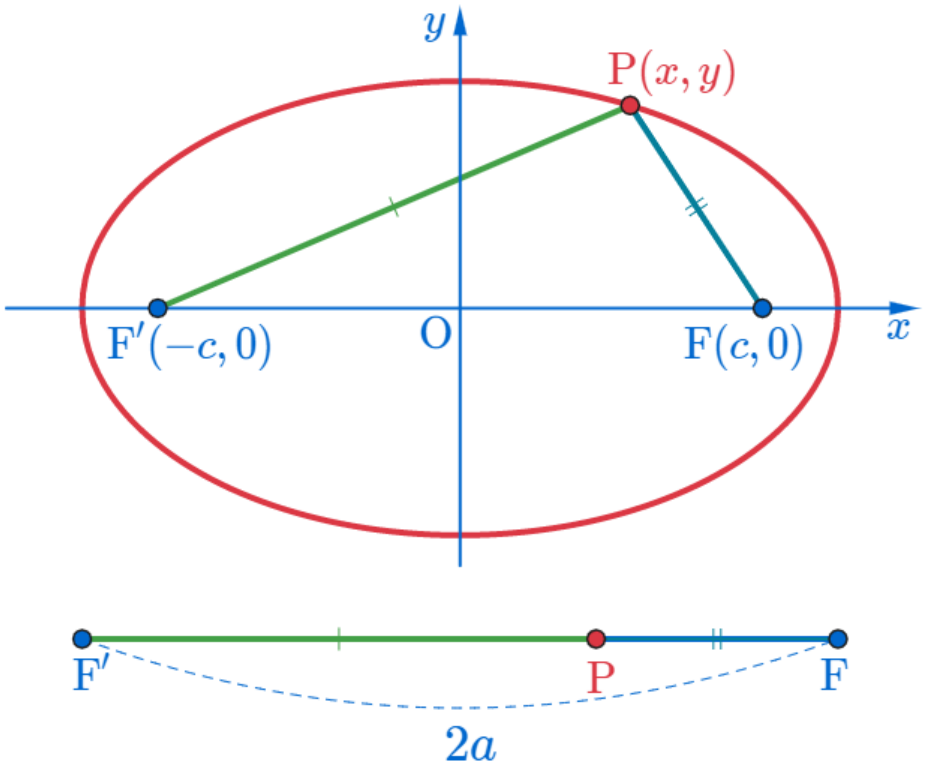

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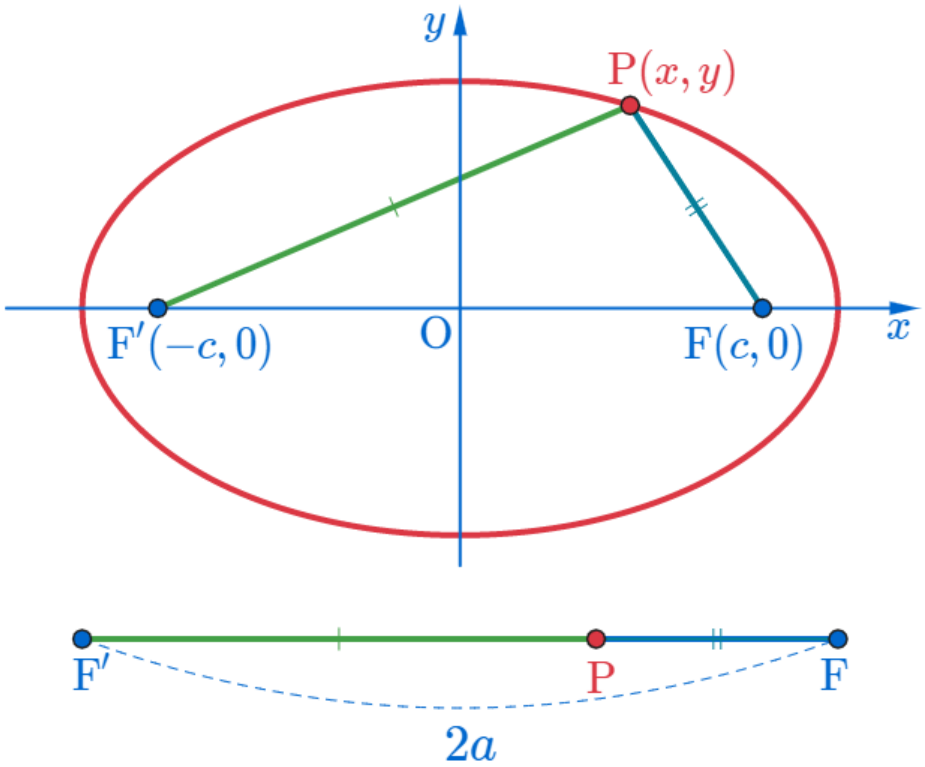
$$\overline{\mathrm{PF}} + \overline{\mathrm{PF}'} = 2a$$



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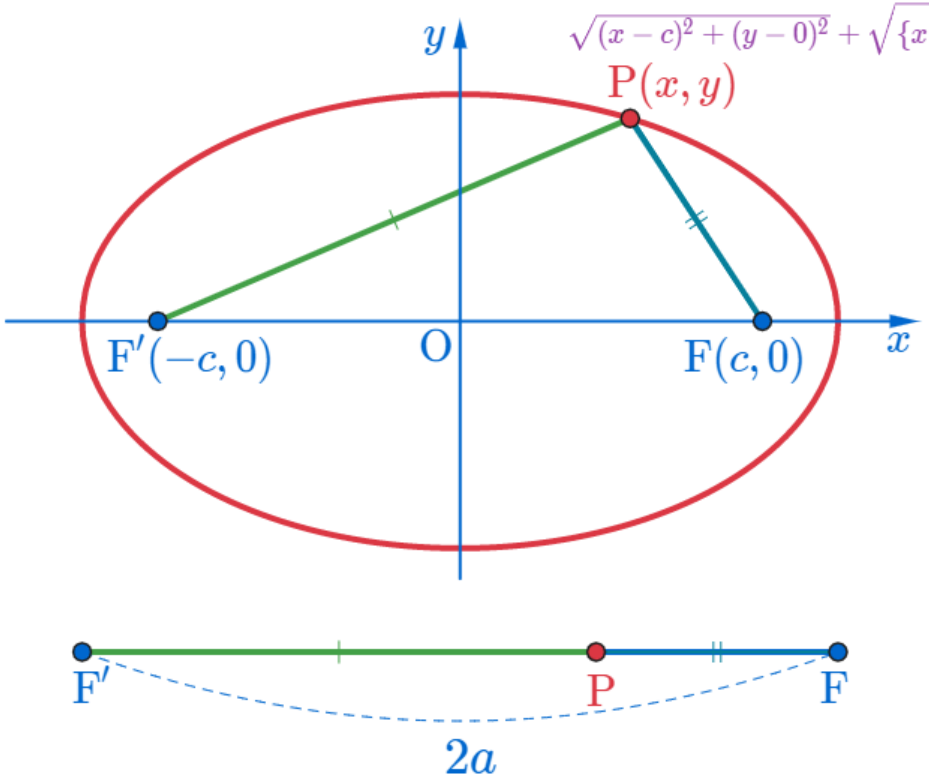

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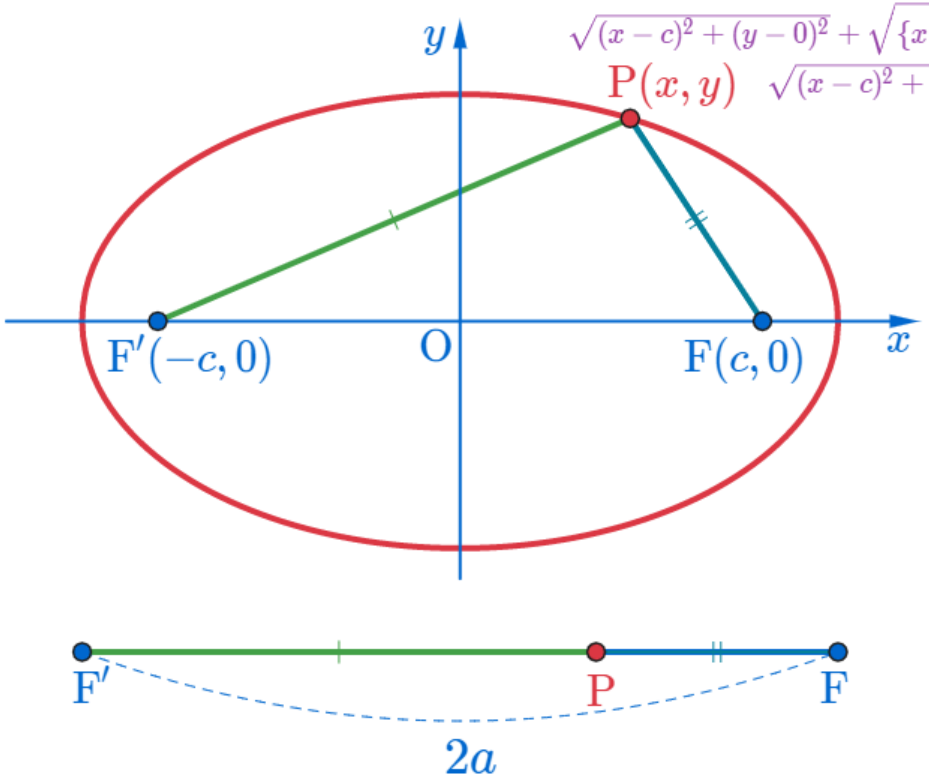

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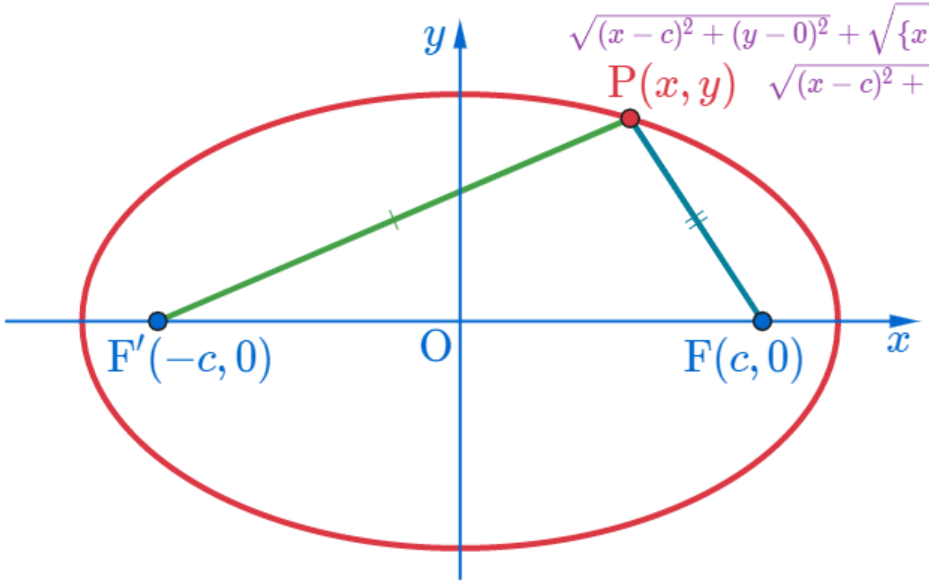

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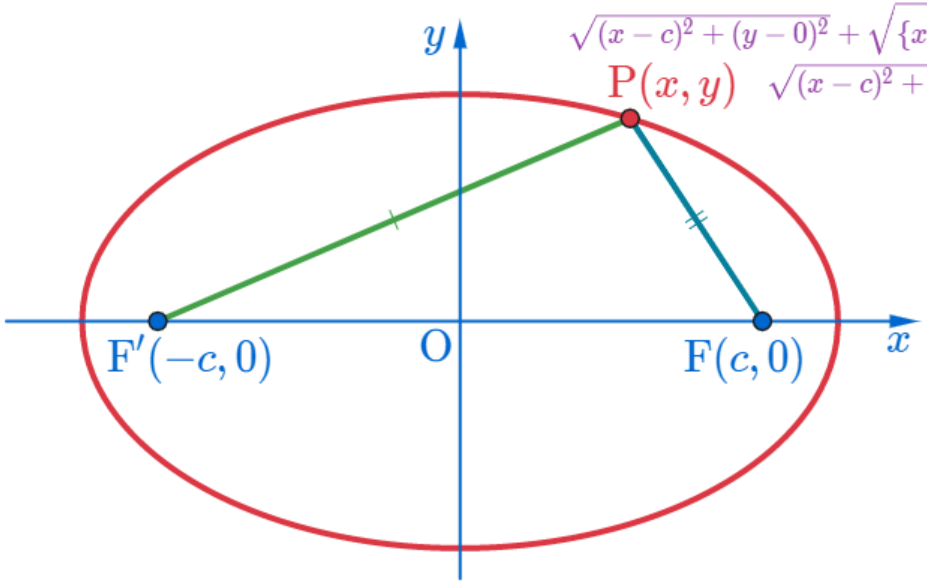

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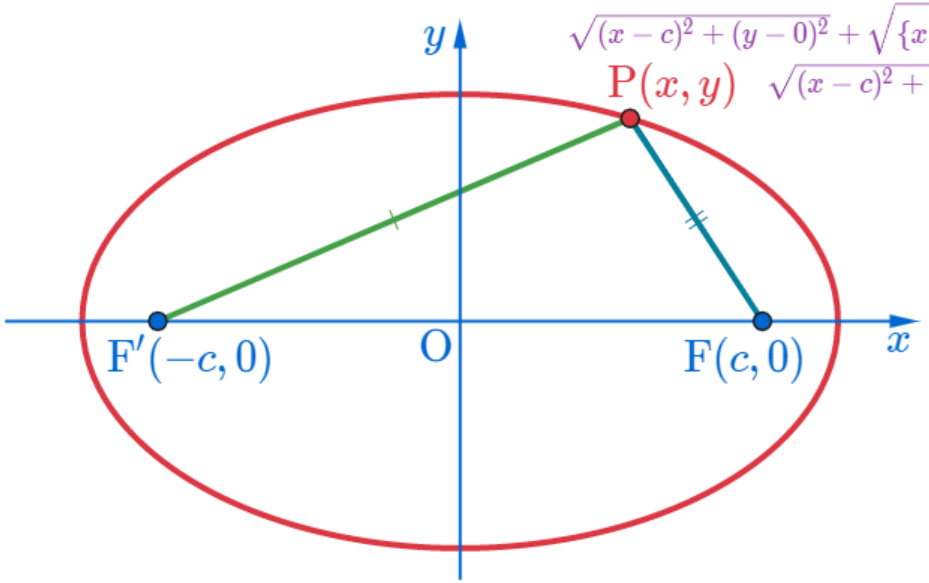

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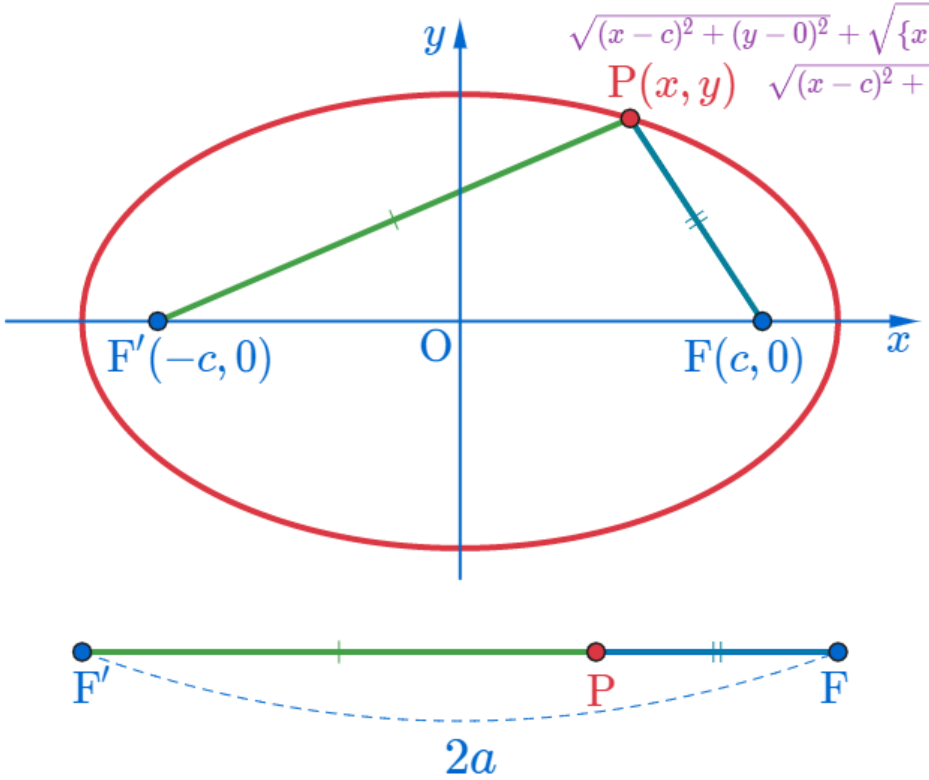

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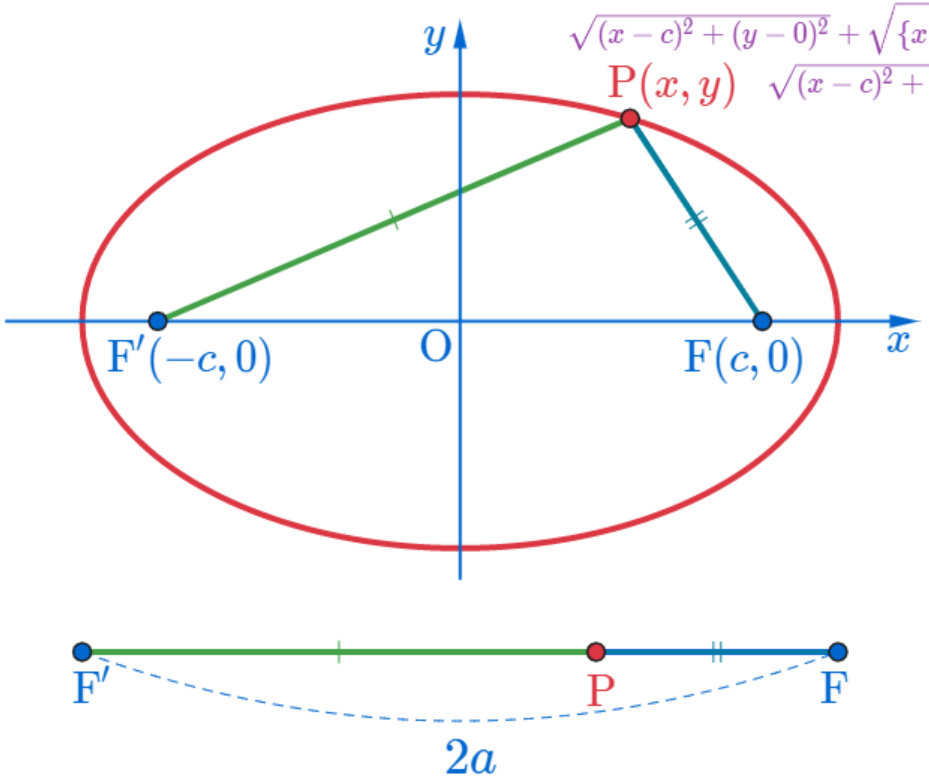

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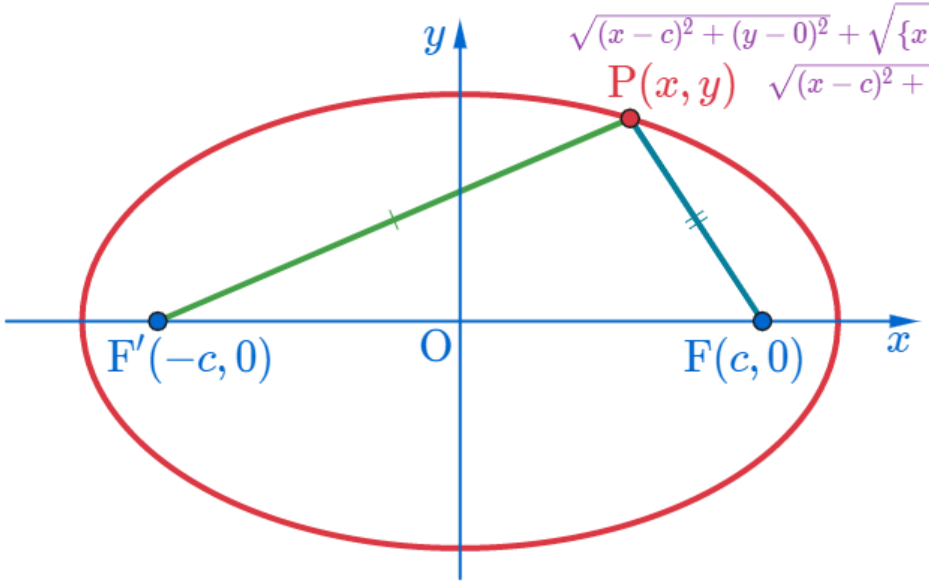

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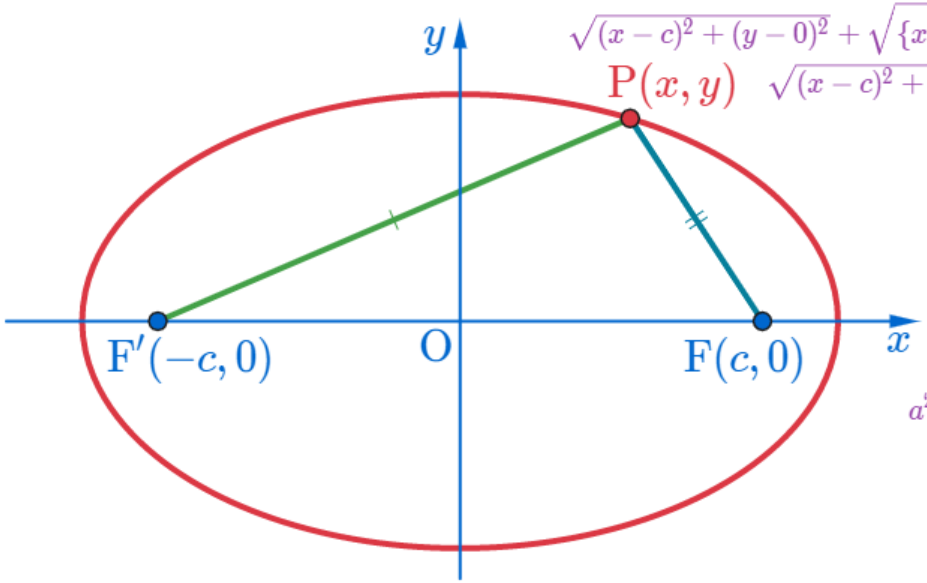

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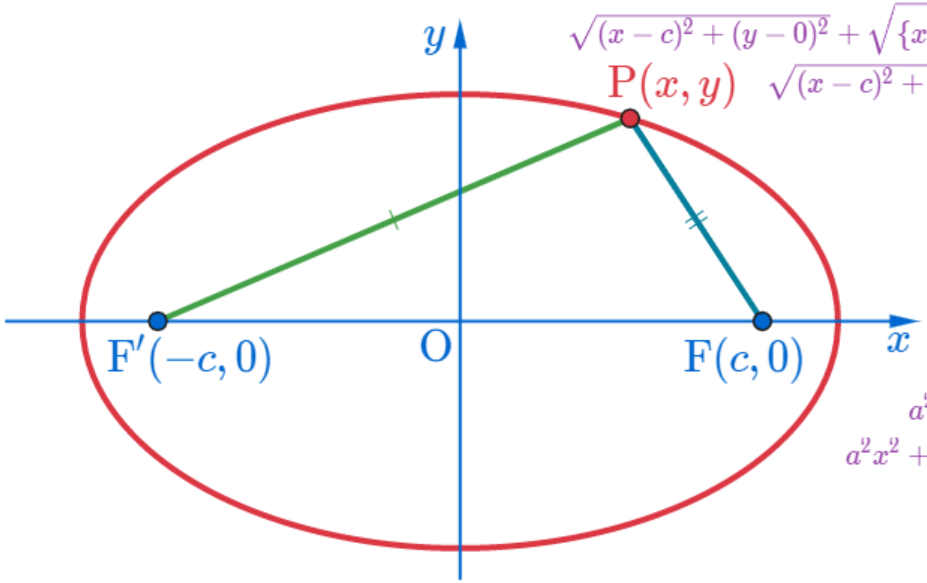

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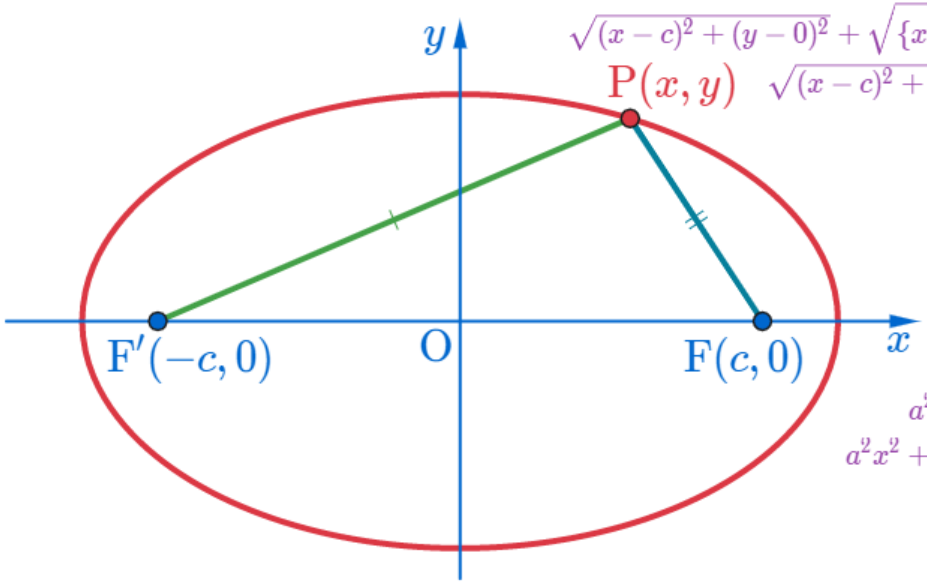

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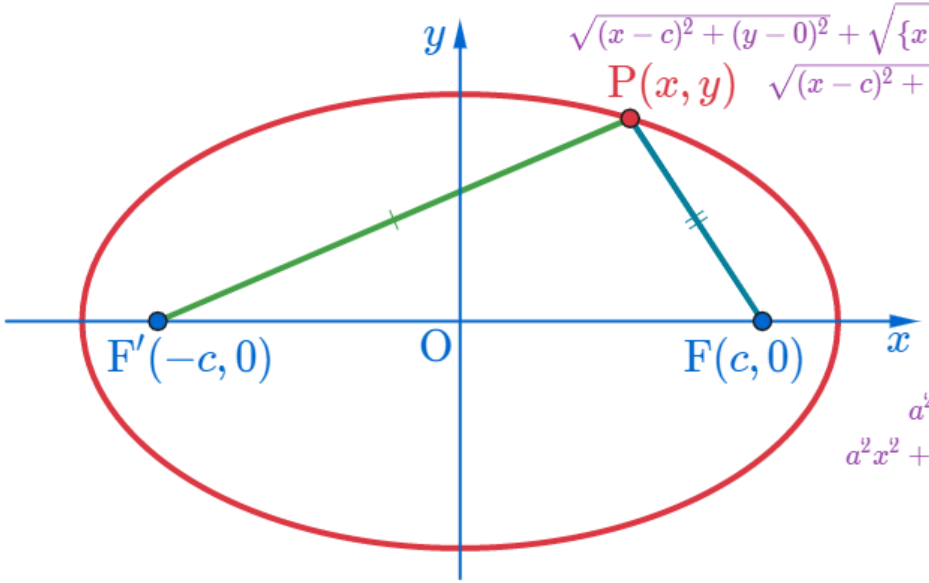

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$$a^2x^2 + a^2c^2 + a^2y^2 = a^4 + c^2x^2$$

$$a^2x^2 - c^2x^2 + a^2y^2 = a^4 - a^2c^2$$

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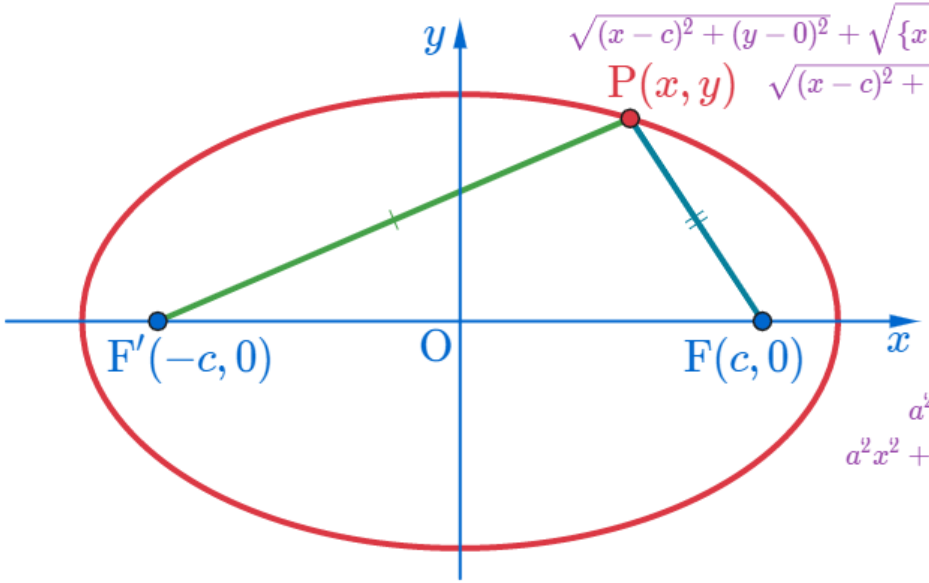

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$$a^2x^2 + a^2c^2 + a^2y^2 = a^4 + c^2x^2$$

$$a^2x^2 - c^2x^2 + a^2y^2 = a^4 - a^2c^2$$

$$(a^2-c^2)x^2 + a^2y^2 = a^2(a^2-c^2)$$

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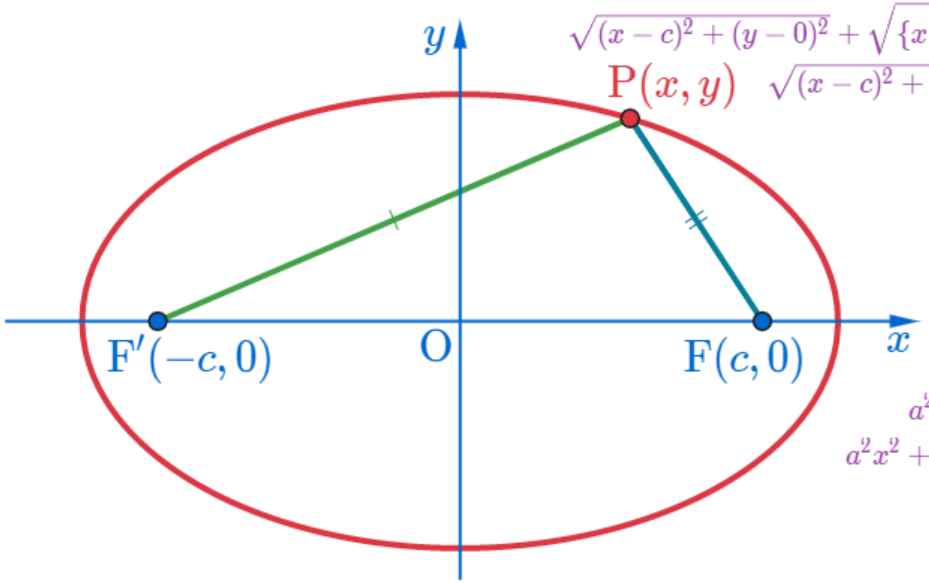

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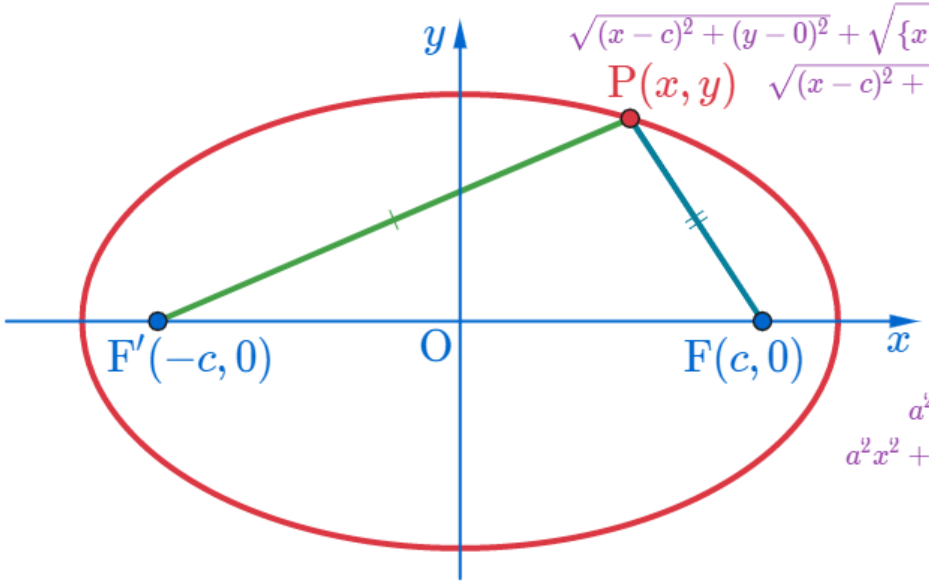
Let $b^2 = a^2 - c^2$

Find the equation of the ellipse where the sum of the distances from $\mathrm{F}(-c,0)$ and $\mathrm{F}'(-c,0)$ is $2a$.



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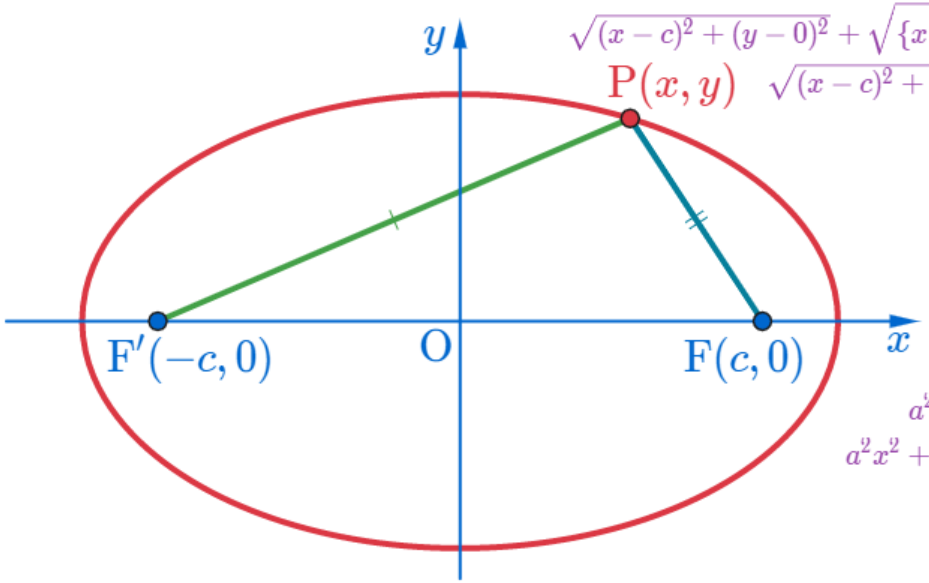

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$$\therefore \frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

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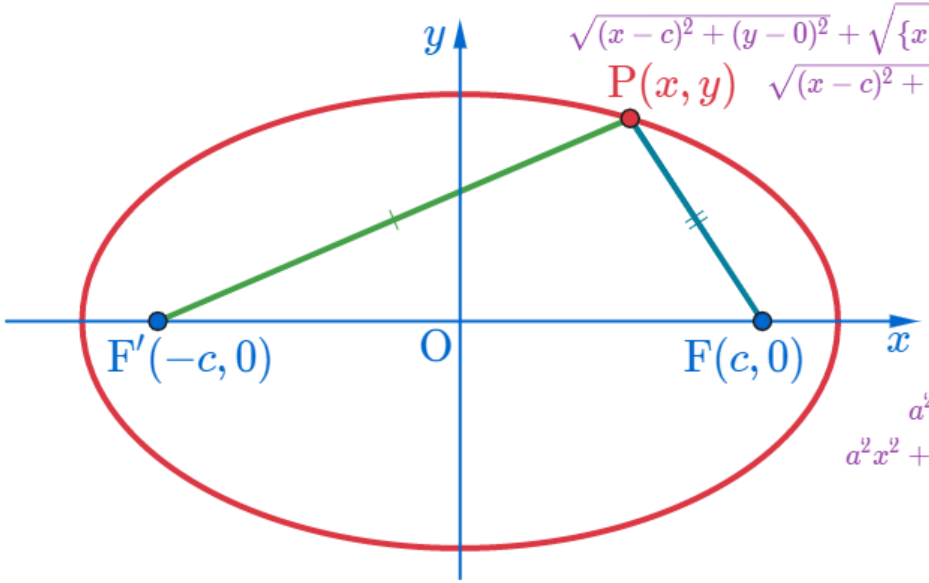

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$$\therefore \frac{x^2}{a^2} + \frac{y^2}{b^2} = 1 \quad (a > c > 0,\ b^2 = a^2 - c^2)$$

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Github:
https://min7014.github.io/math20200422001.html

Click or paste URL into the URL search bar, and you can see a picture moving.