두 초점이 $(0, k)$, $(0, -k)$ 이고 길이의 차가 $2b$ 로 주어 졌을 때 쌍곡선의 방정식

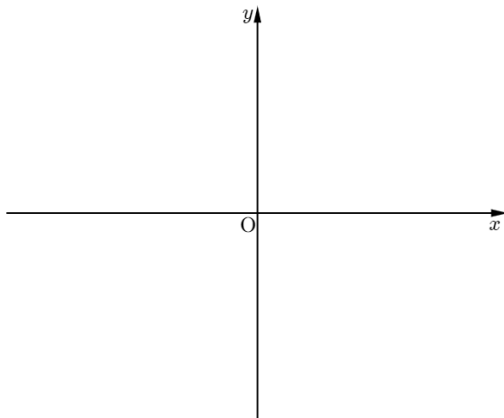(The hyperbolic equation when the two focal points are $(0, k)$, $(0, -k)$ and the difference in length is given by $2b$)

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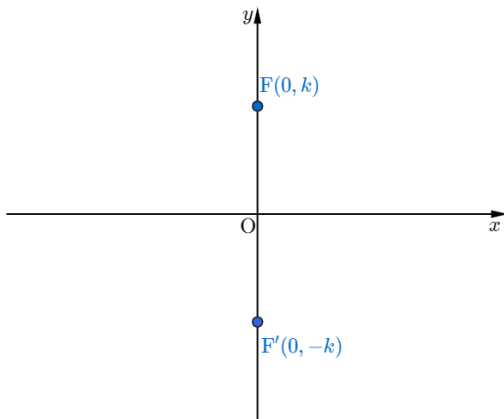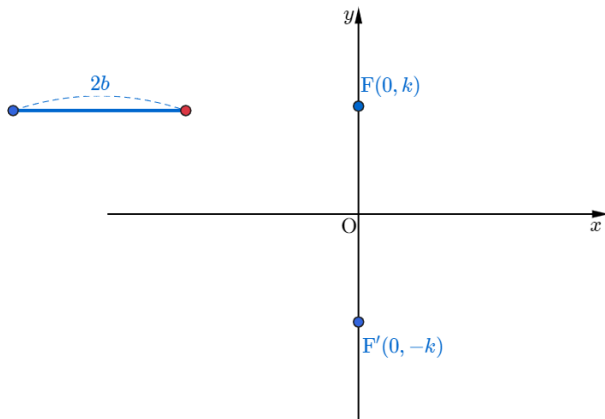
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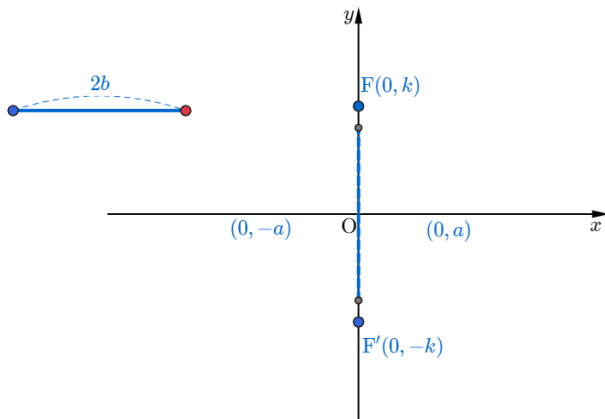
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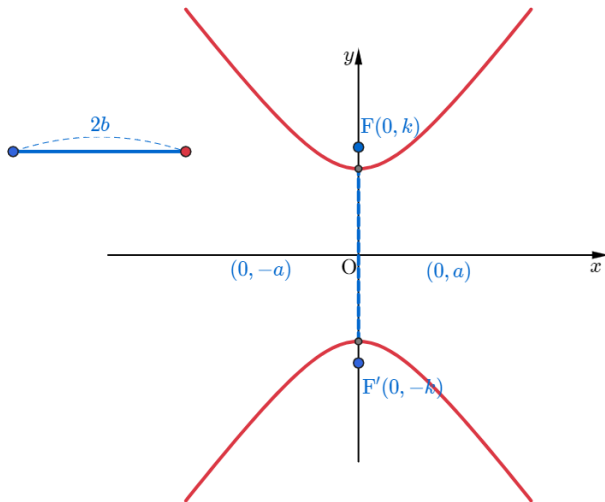
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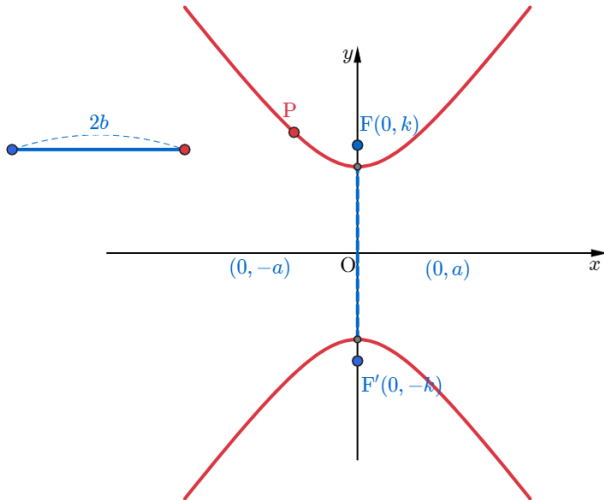
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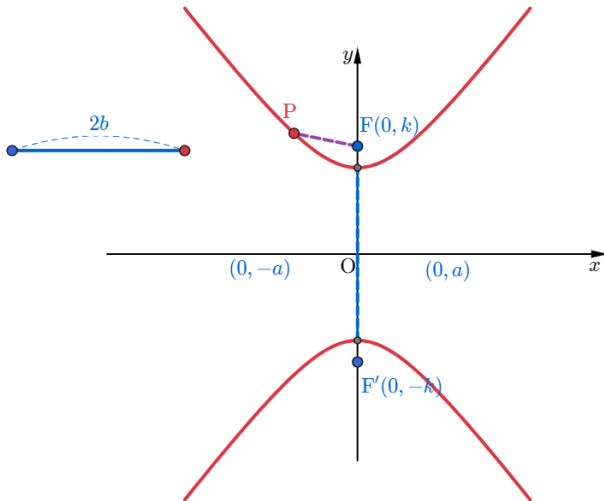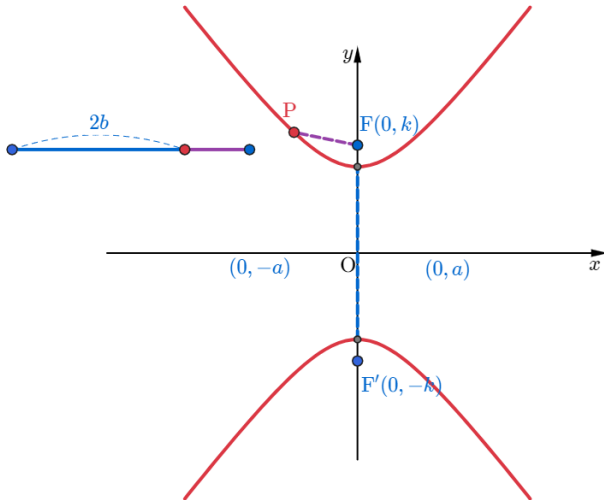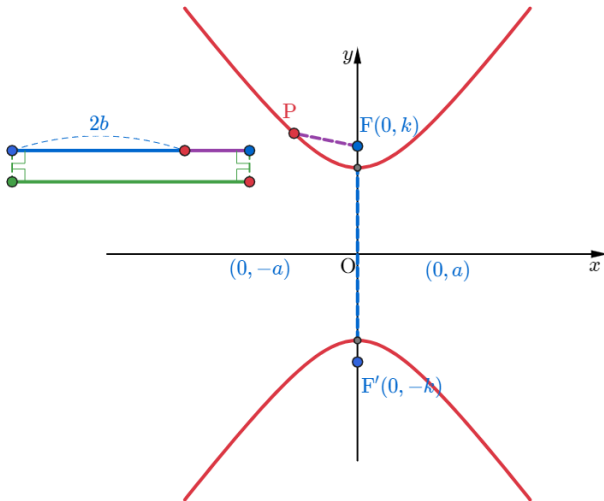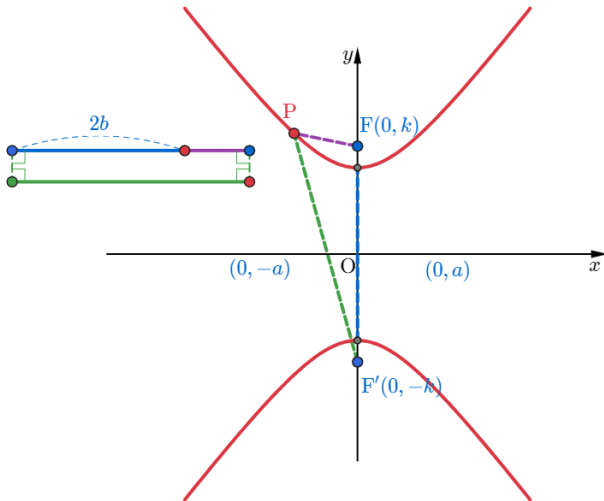
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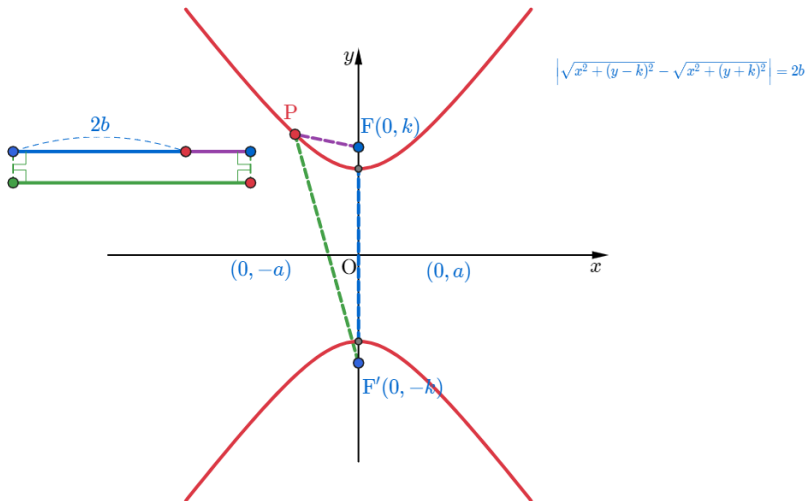$$\left| \sqrt{x^2 + (y-k)^2} - \sqrt{x^2 + (y+k)^2} \right| = 2b$$

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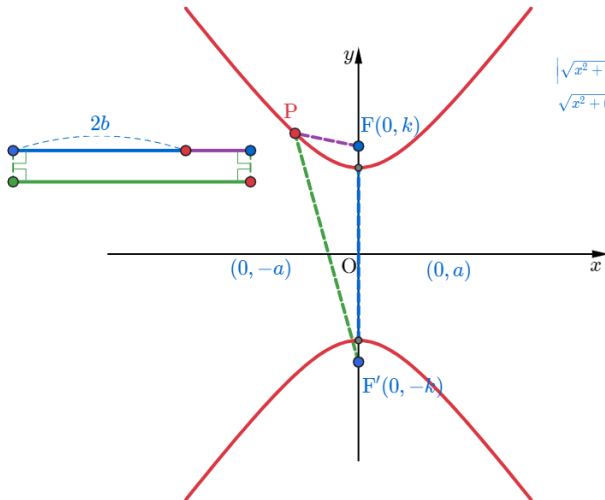$$\left| \sqrt{x^2 + (y-k)^2} - \sqrt{x^2 + (y+k)^2} \right| = 2b$$

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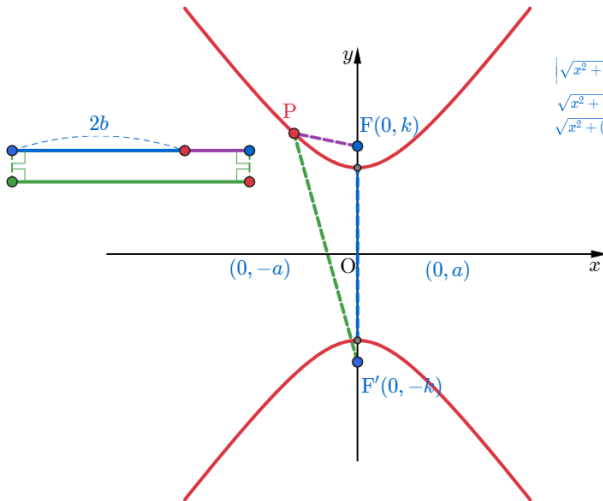$$x^2 + (y-k)^2 = x^2 + (y+k)^2 \pm 4b\sqrt{x^2 + (y+k)^2} + 4b^2$$

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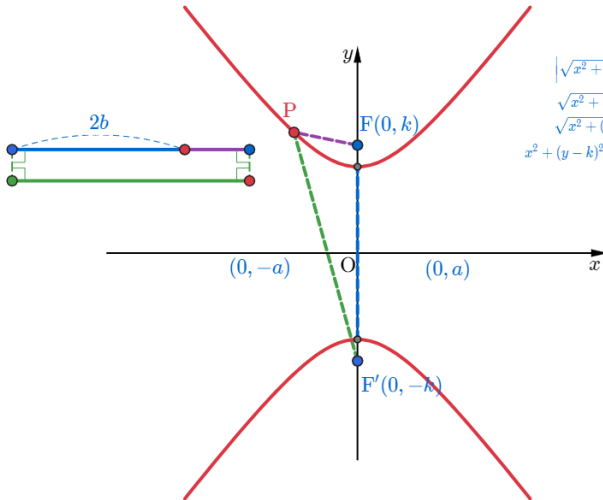The hyperbolic equation when the two focal points are $(0, k)$, $(0, -k)$ and the difference in length is given by $2b$

$$\left| \sqrt{x^2 + (y-k)^2} - \sqrt{x^2 + (y+k)^2} \right| = 2b$$

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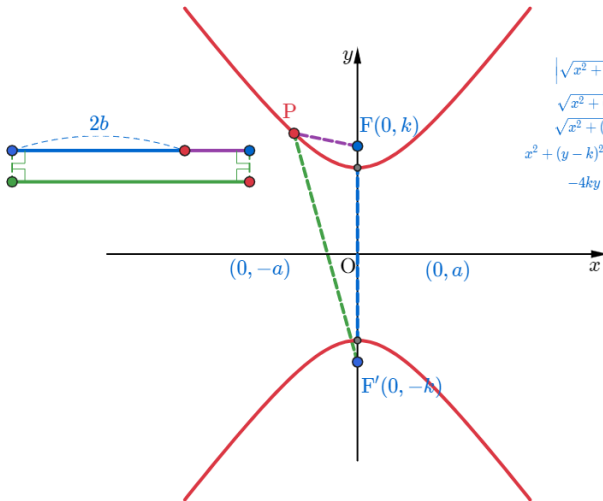$$\sqrt{x^2 + (y-k)^2} = \sqrt{x^2 + (y+k)^2} \pm 2b$$

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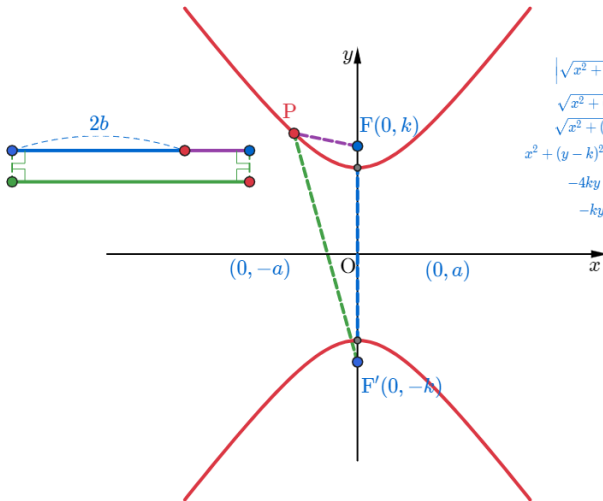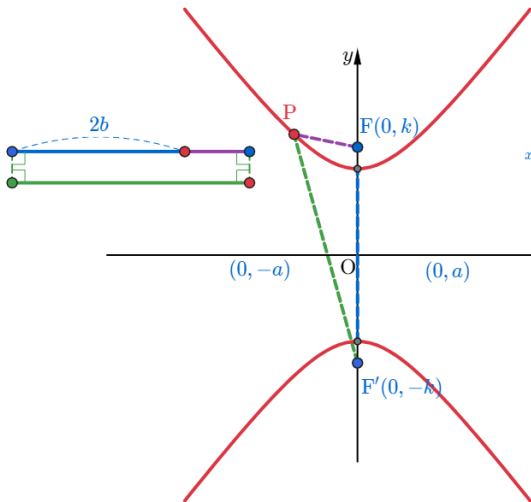$$\left| \sqrt{x^2 + (y-k)^2} - \sqrt{x^2 + (y+k)^2} \right| = 2b$$

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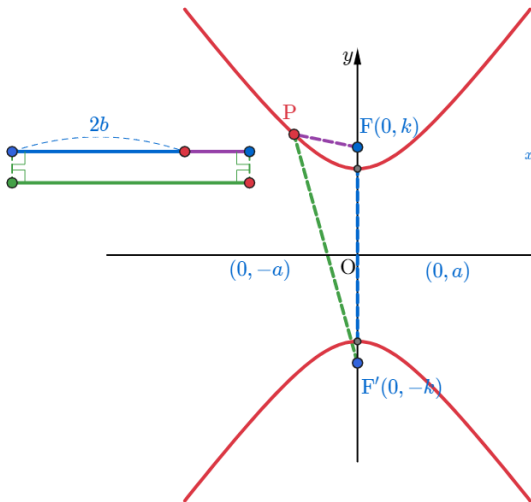$$\left|\sqrt{x^2 + (y-k)^2} - \sqrt{x^2 + (y+k)^2}\right| = 2b$$

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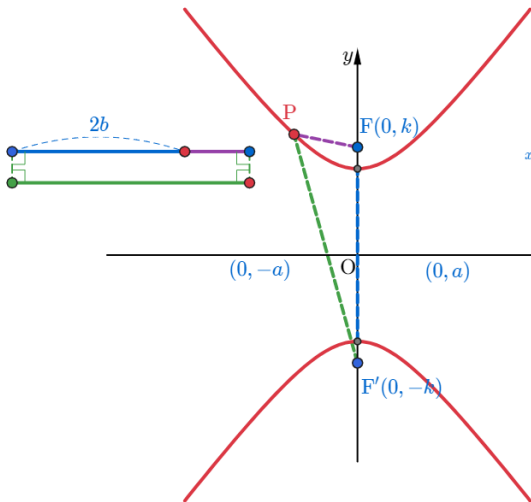$$\left|\sqrt{x^2 + (y-k)^2} - \sqrt{x^2 + (y+k)^2}\right| = 2b$$

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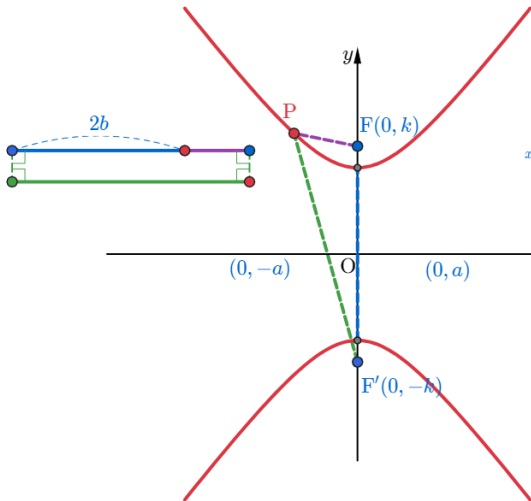

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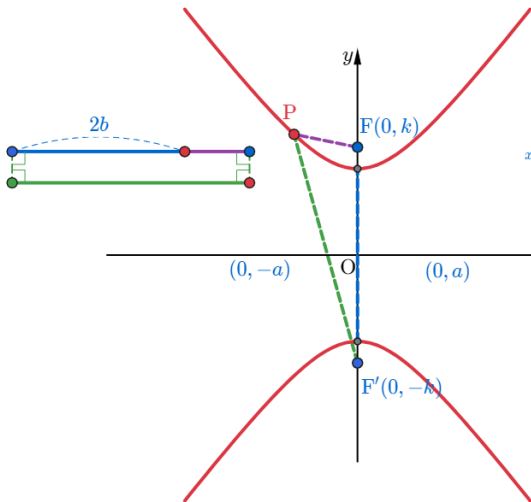

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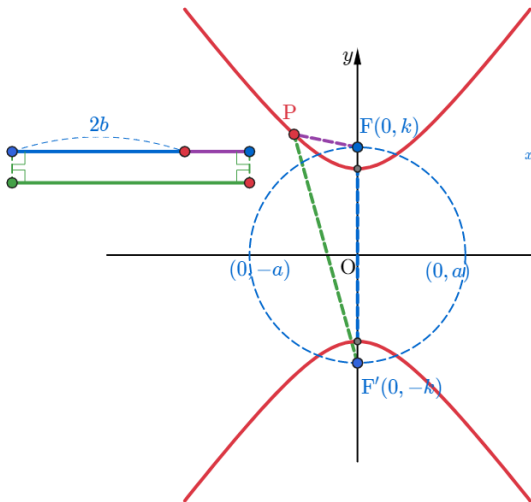$$k^2 y^2 + 2b^2 ky + b^4 = b^2 x^2 + b^2 y^2 + 2b^2 ky + b^2 k^2$$

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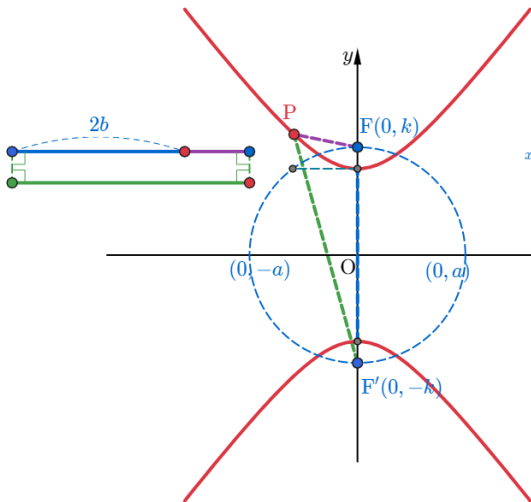$$k^2 y^2 + 2b^2 ky + b^4 = b^2 x^2 + b^2 y^2 + 2b^2 ky + b^2 k^2$$

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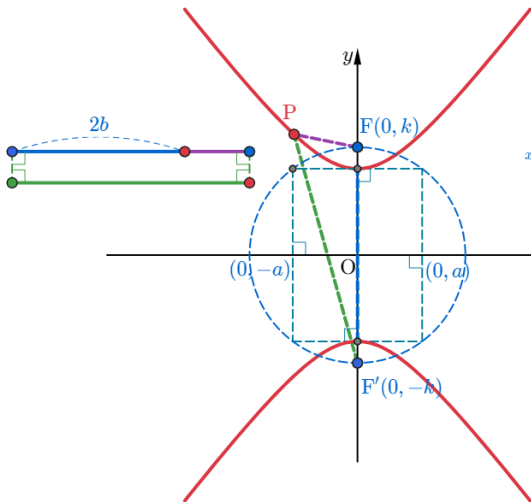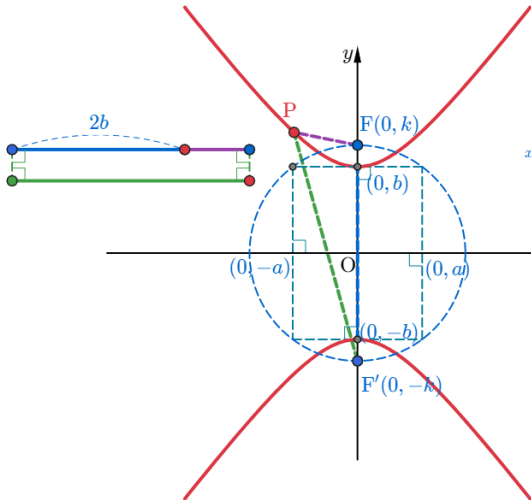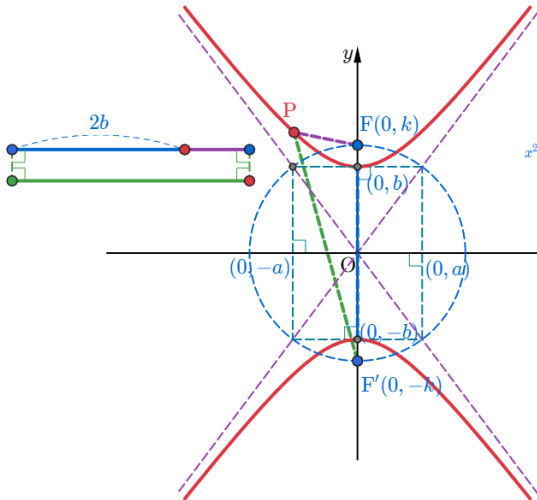$$-b^2x^2 + (k^2 - b^2)y^2 = b^2(k^2 - b^2)$$

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Github:
https://min7014.github.io/math20200610001.html

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