삼각함수의 합성(일반각)
(Composition of Trigonometric Functions (Ggeneral Angle))

Composition of Trigonometric Functions (Ggeneral Angle)

▸ Start ▸ End

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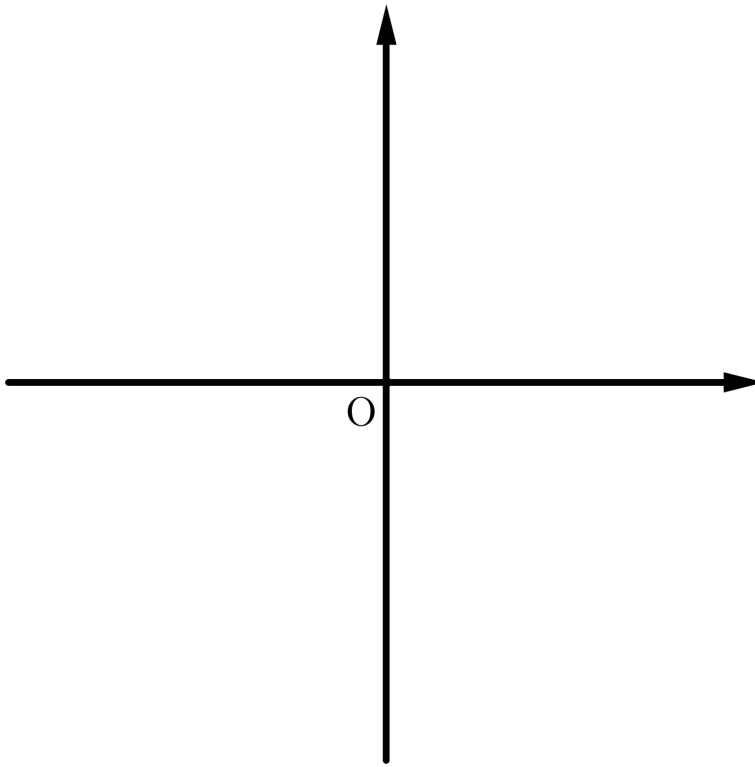
Composition of Trigonometric Functions (Ggeneral Angle)

Start End

$$a\sin\theta + b\cos\theta \ (ab \neq 0)$$



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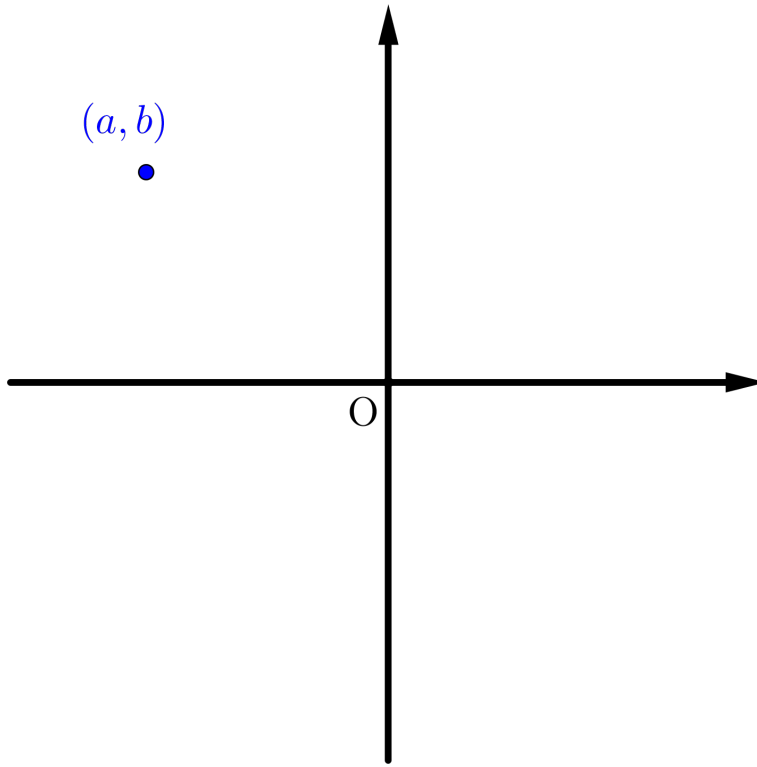

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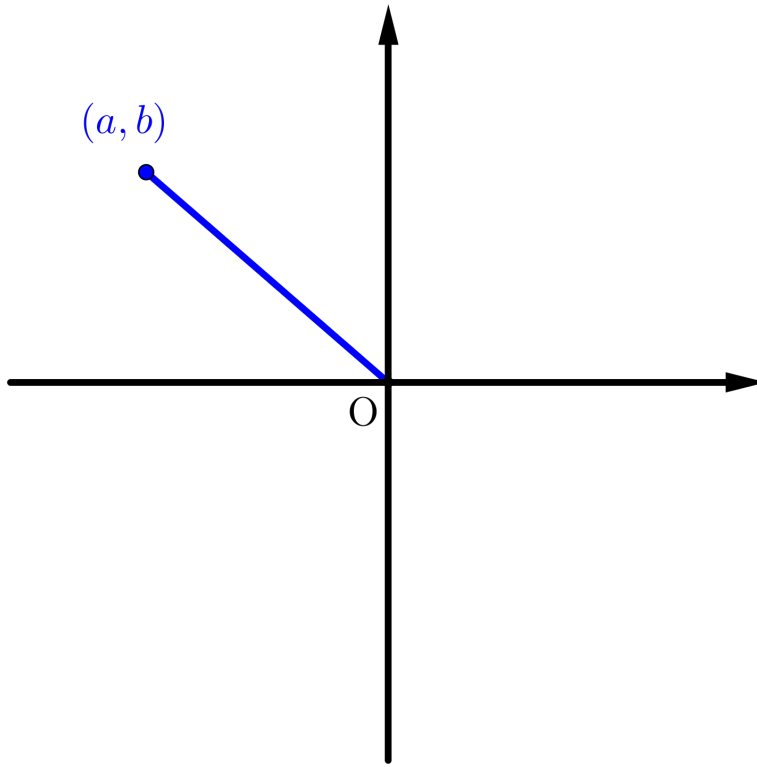

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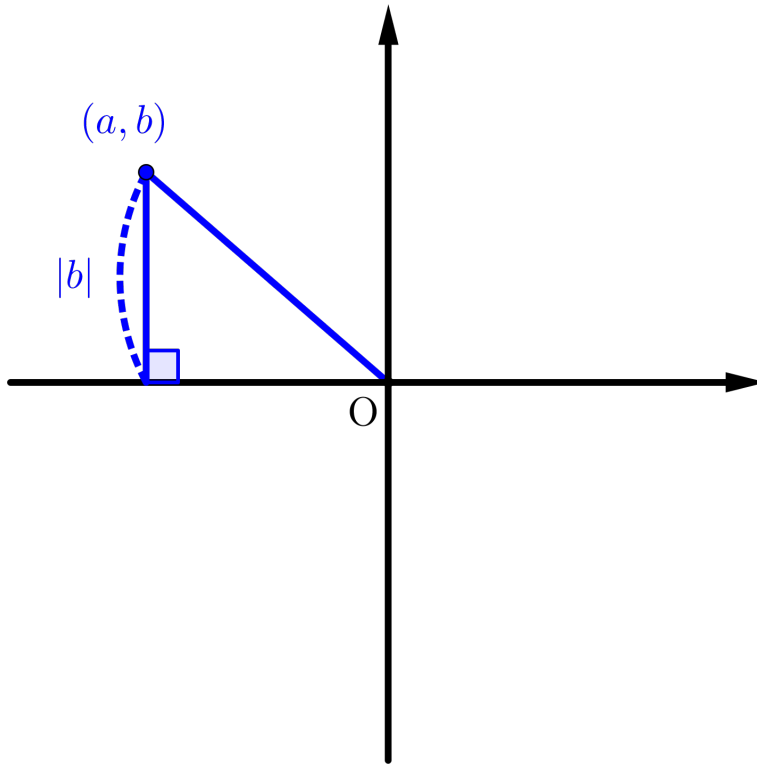

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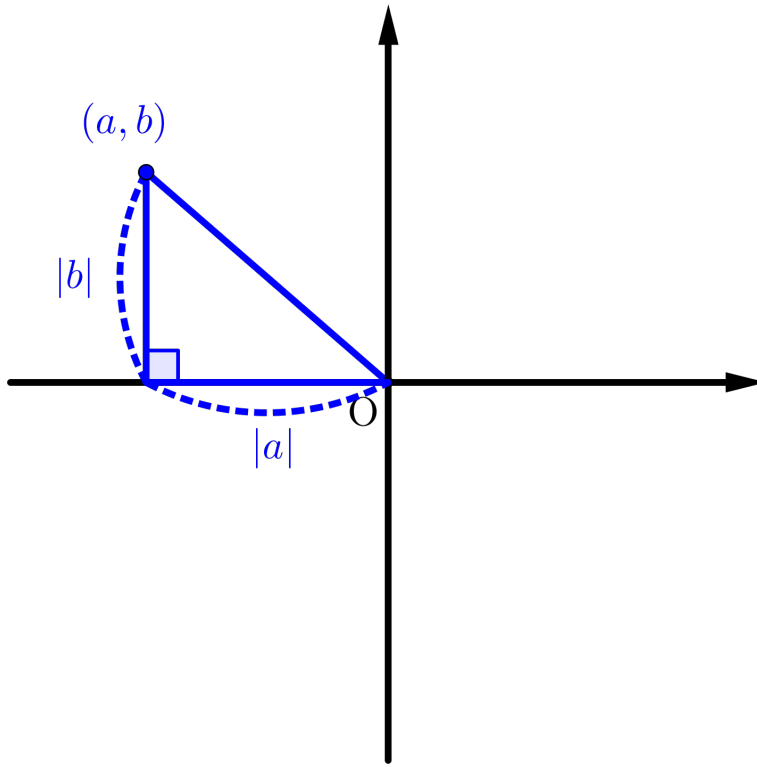

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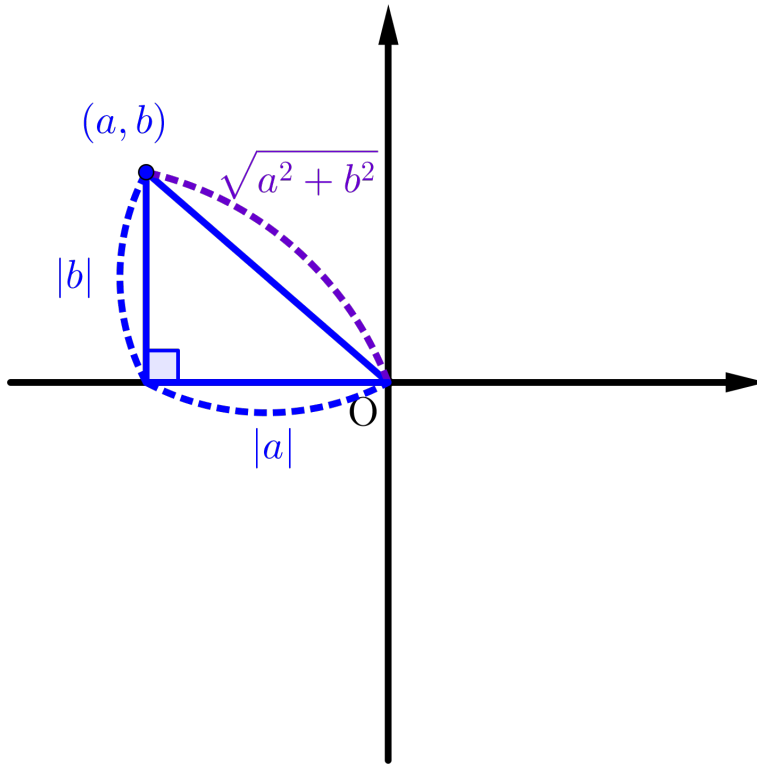

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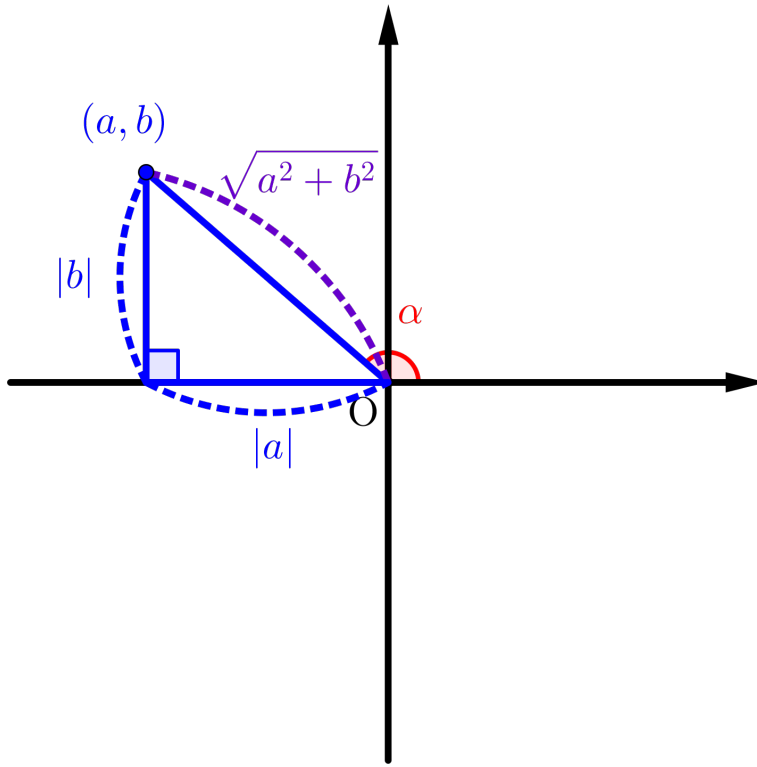

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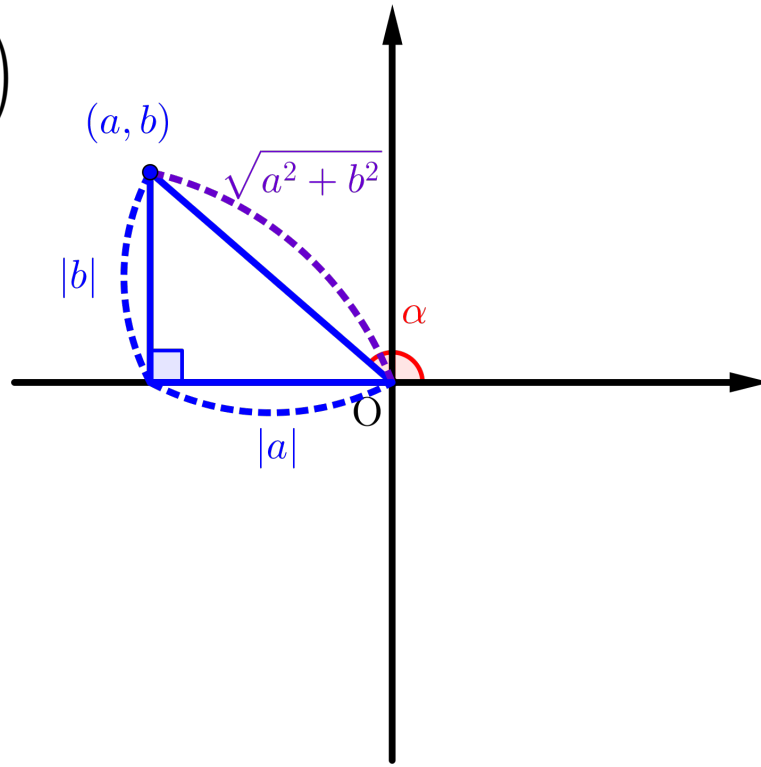
$$a\sin\theta + b\cos\theta \ (ab \neq 0)$$
$$= \sqrt{a^2+b^2}\left(\frac{a}{\sqrt{a^2+b^2}}\sin\theta + \frac{b}{\sqrt{a^2+b^2}}\cos\theta\right)$$



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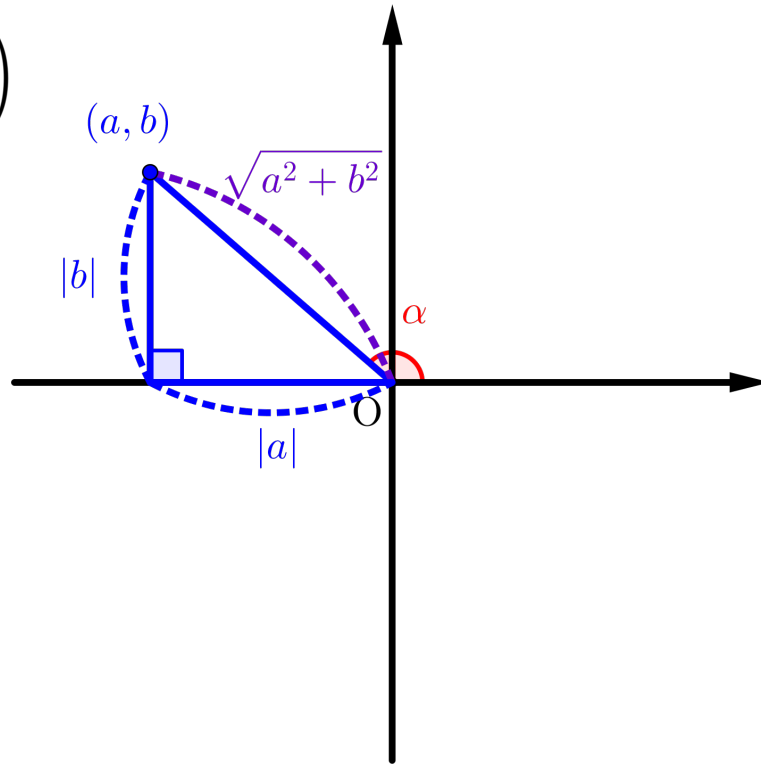

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&= \sqrt{a^2+b^2}\,(\cos\alpha
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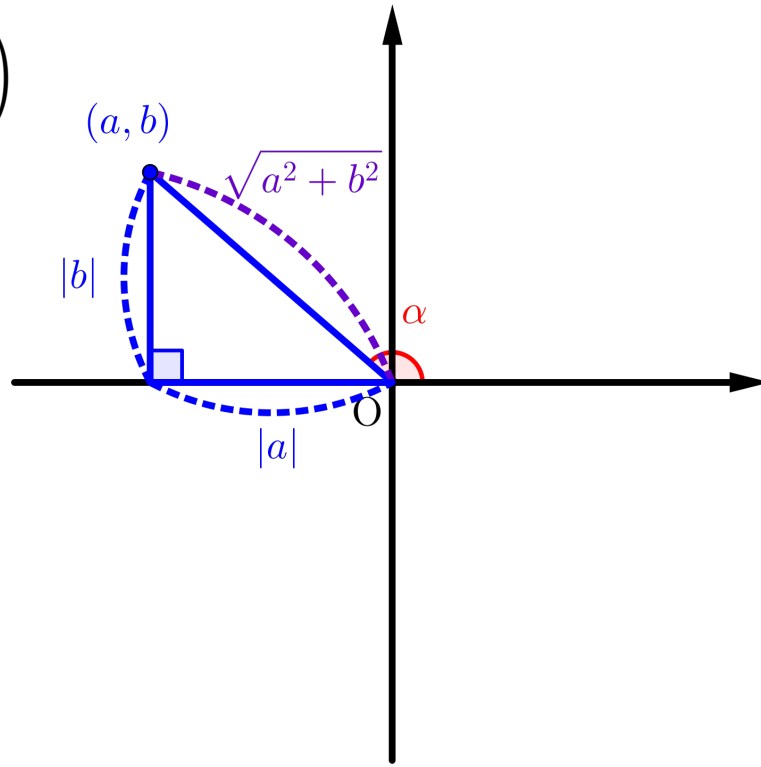

Composition of Trigonometric Functions (Ggeneral Angle)

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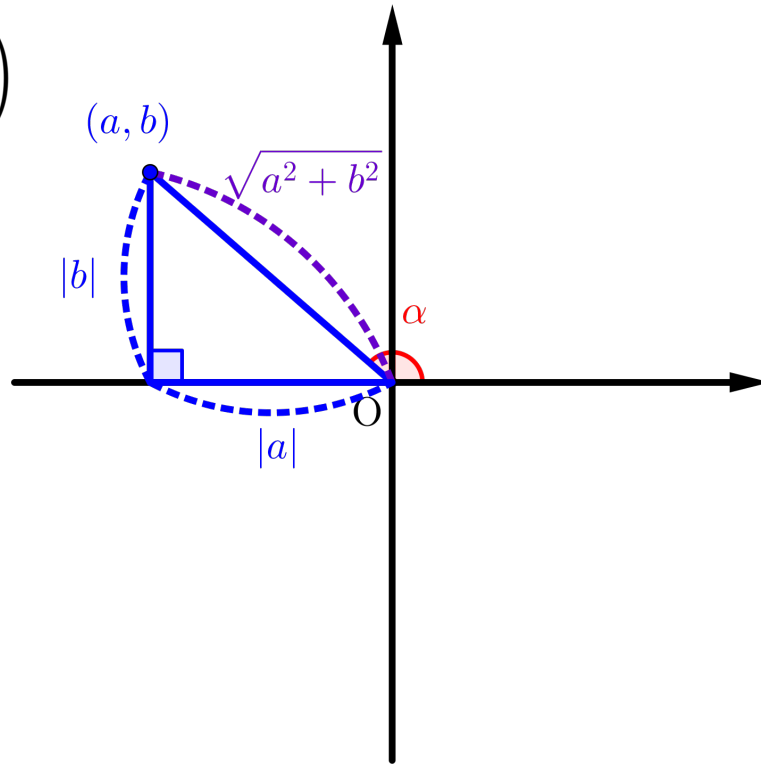

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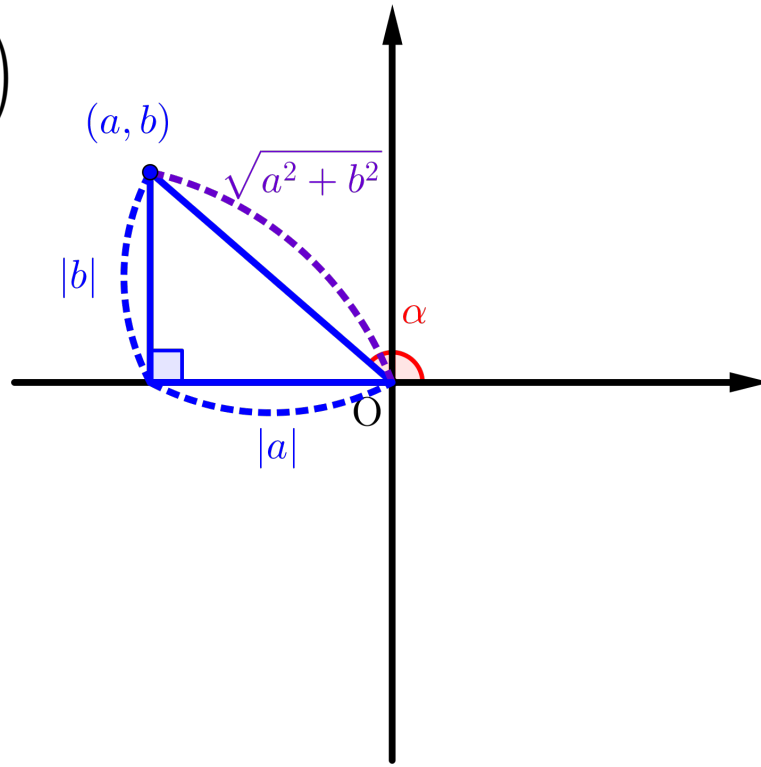

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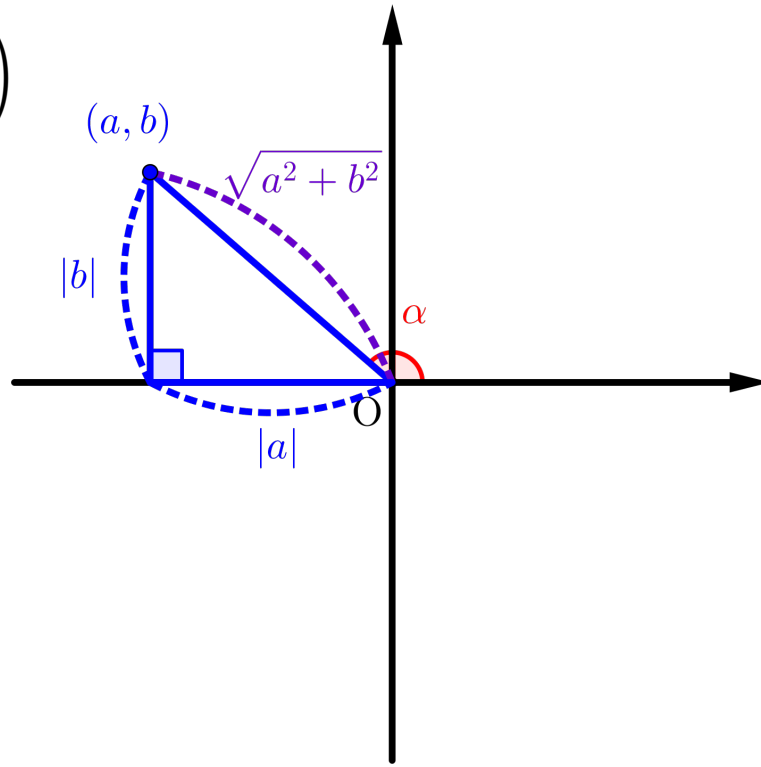

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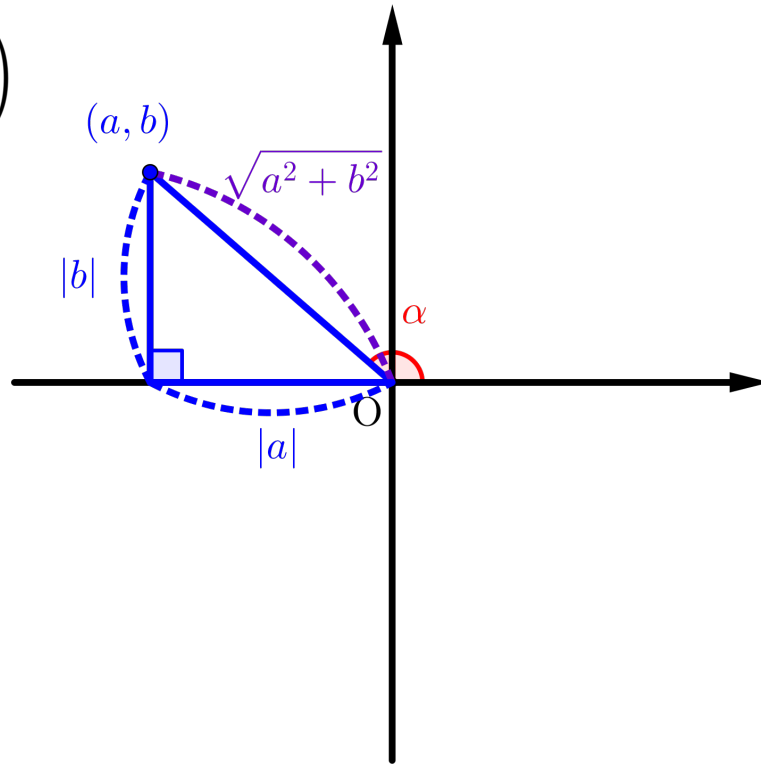

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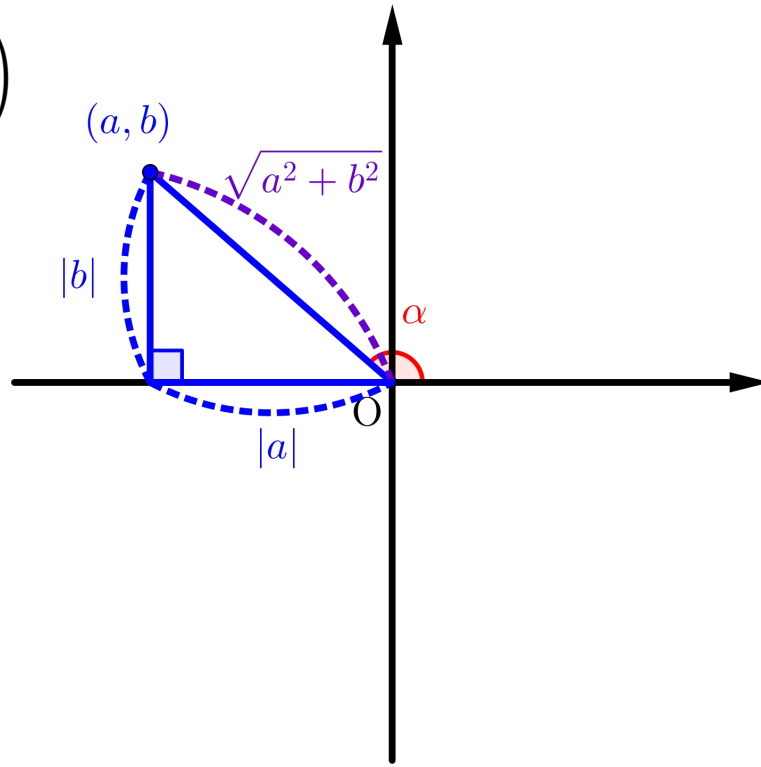

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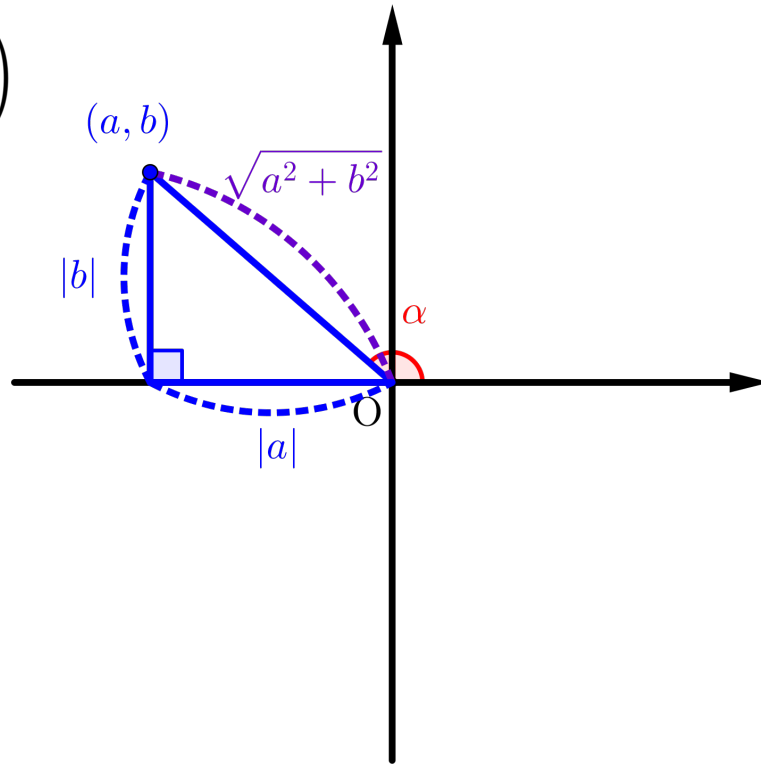

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&= \sqrt{a^2+b^2}\sin(\theta+\alpha)
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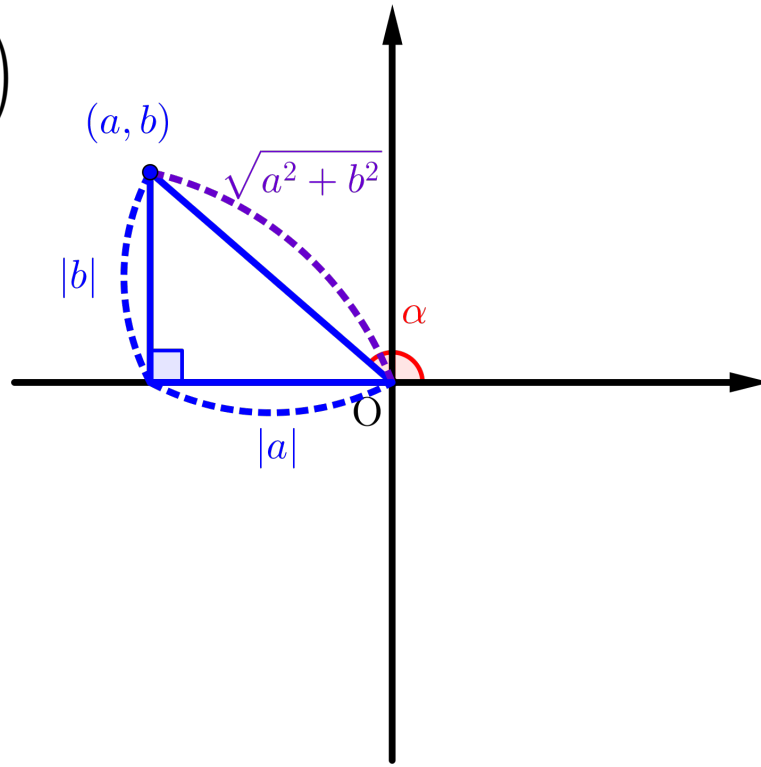

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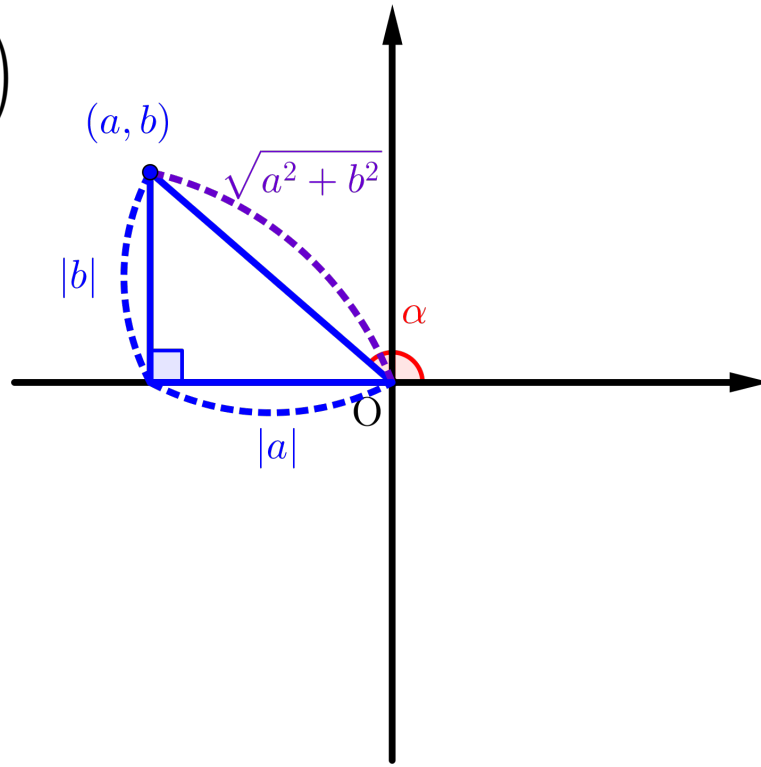

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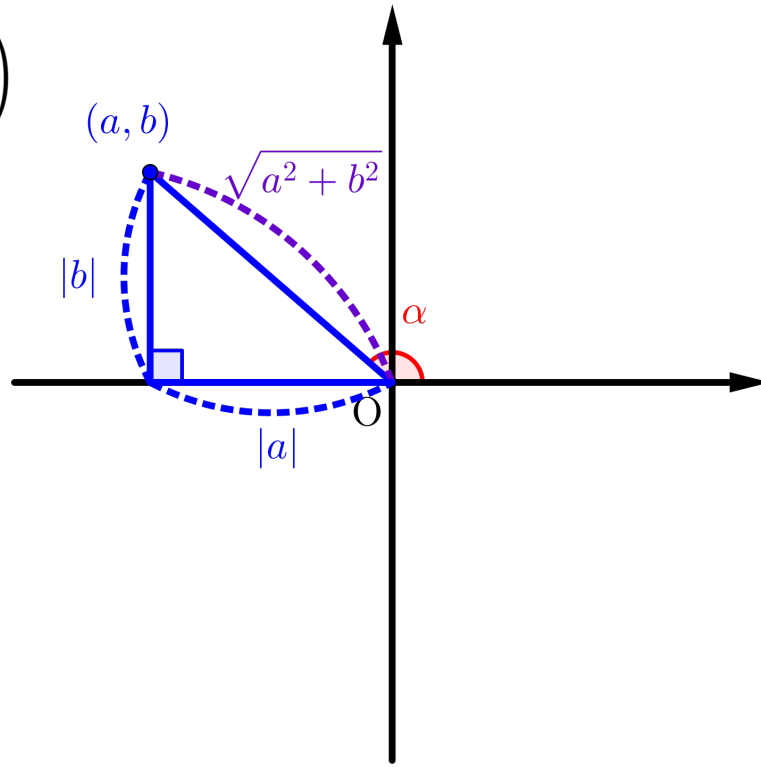

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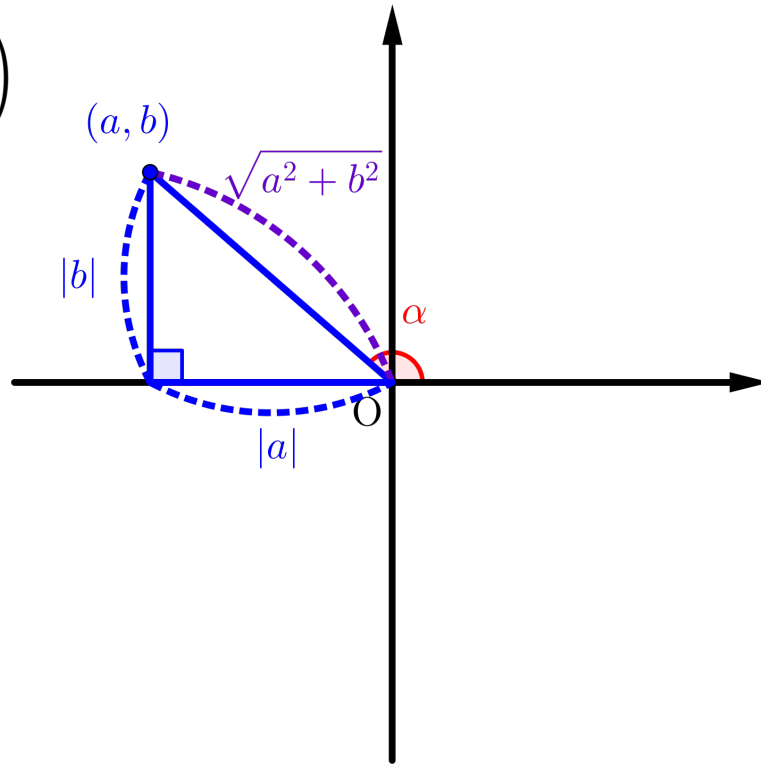

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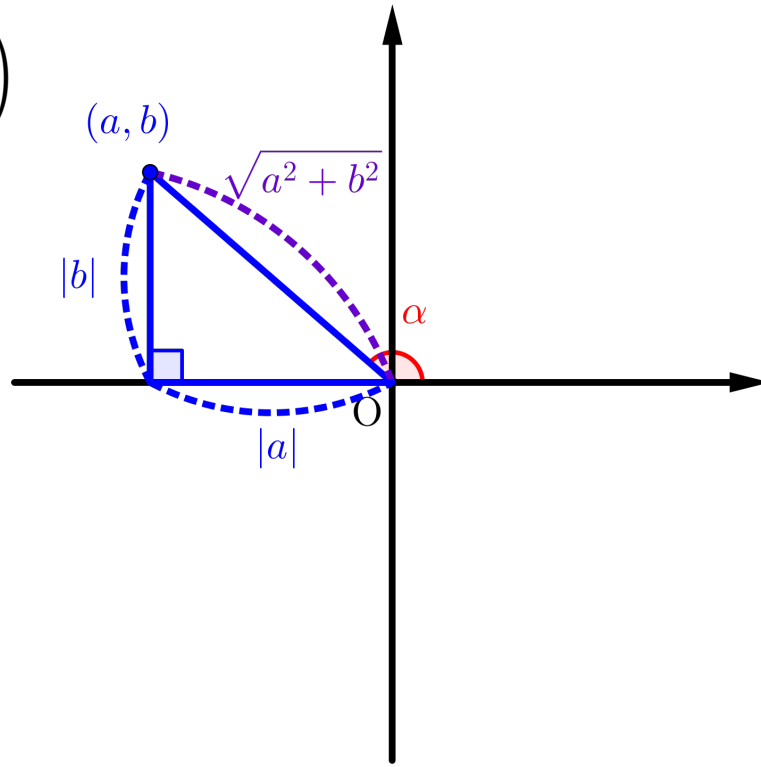

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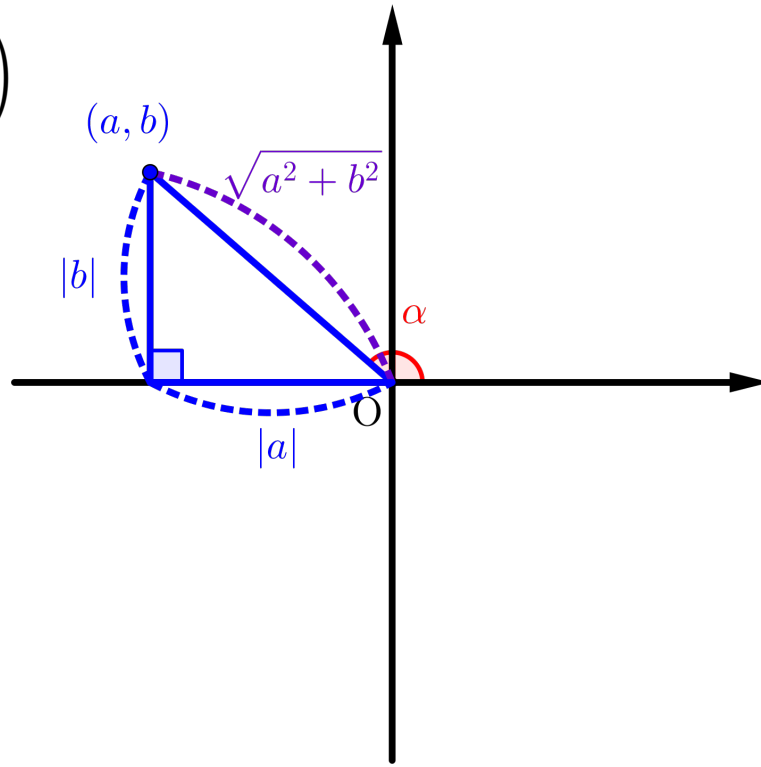

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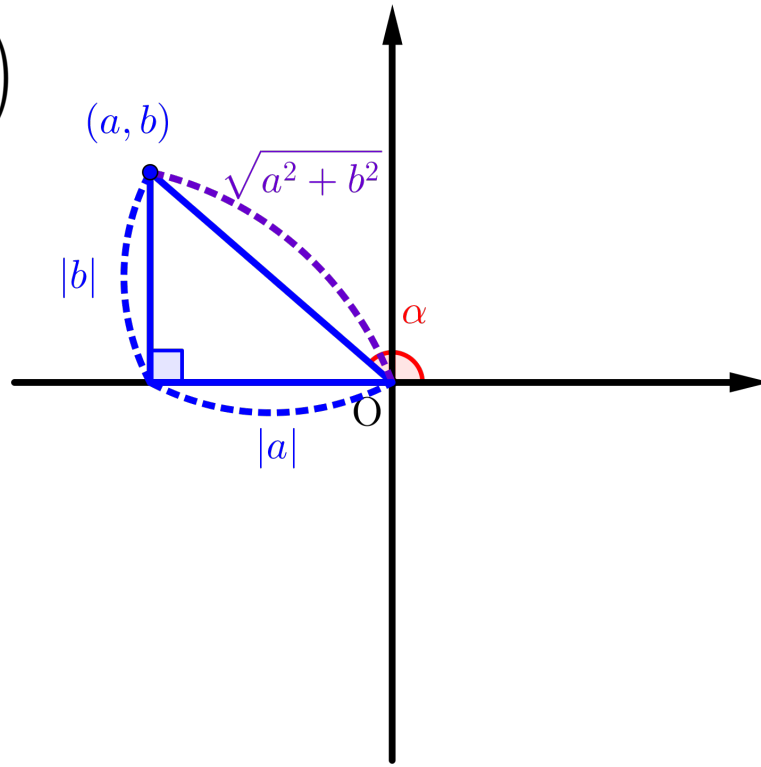

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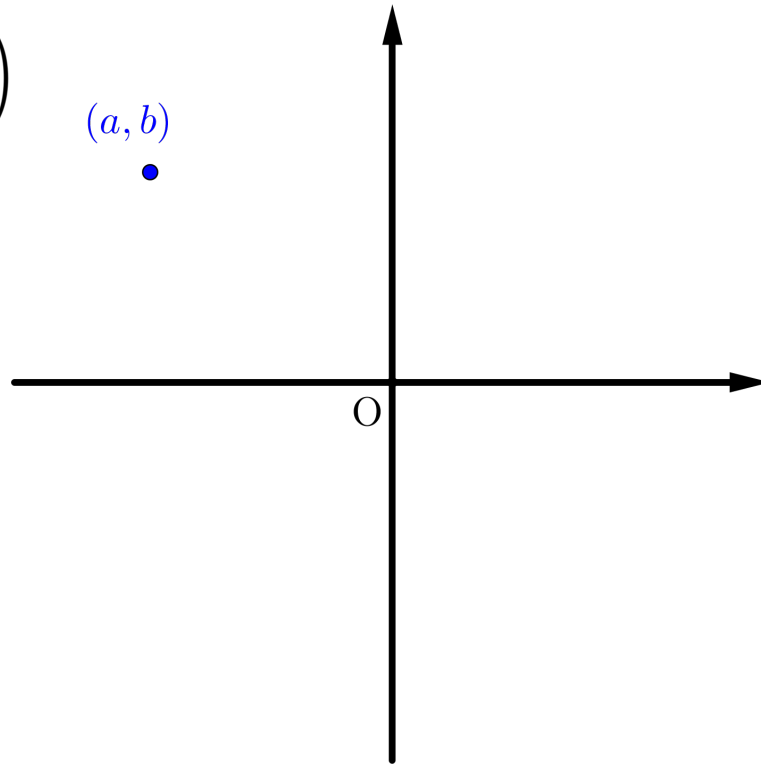

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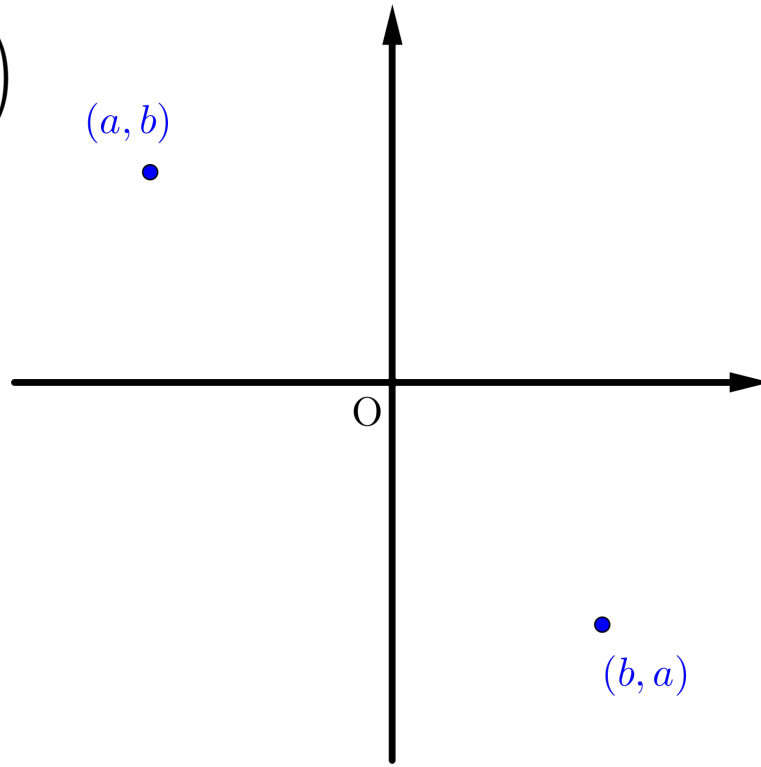

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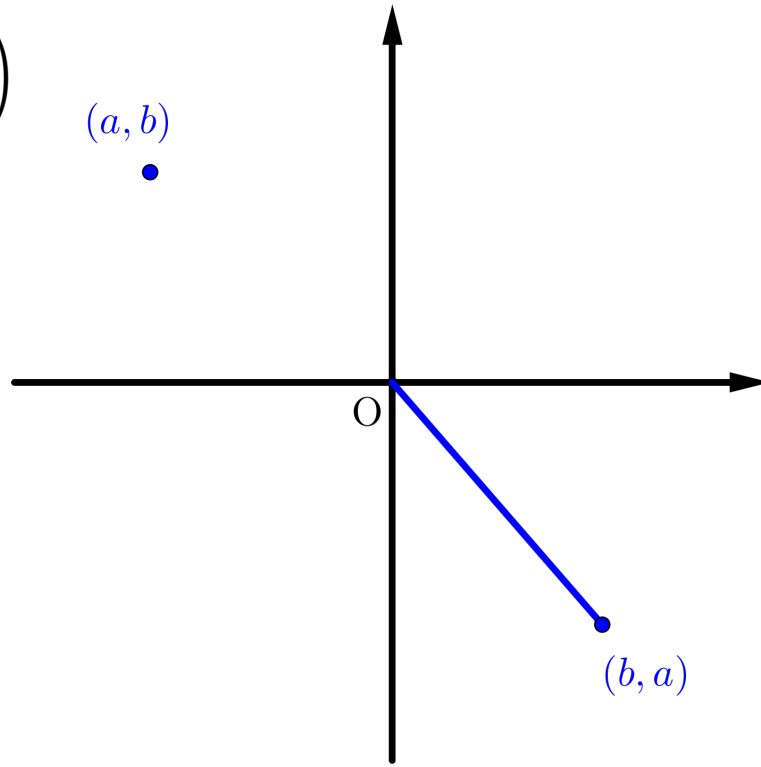

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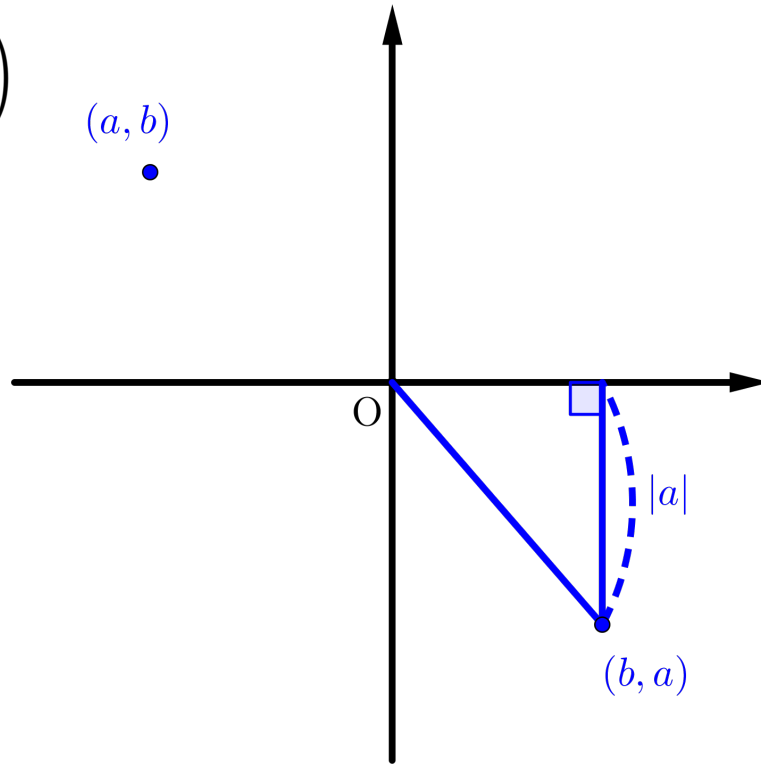

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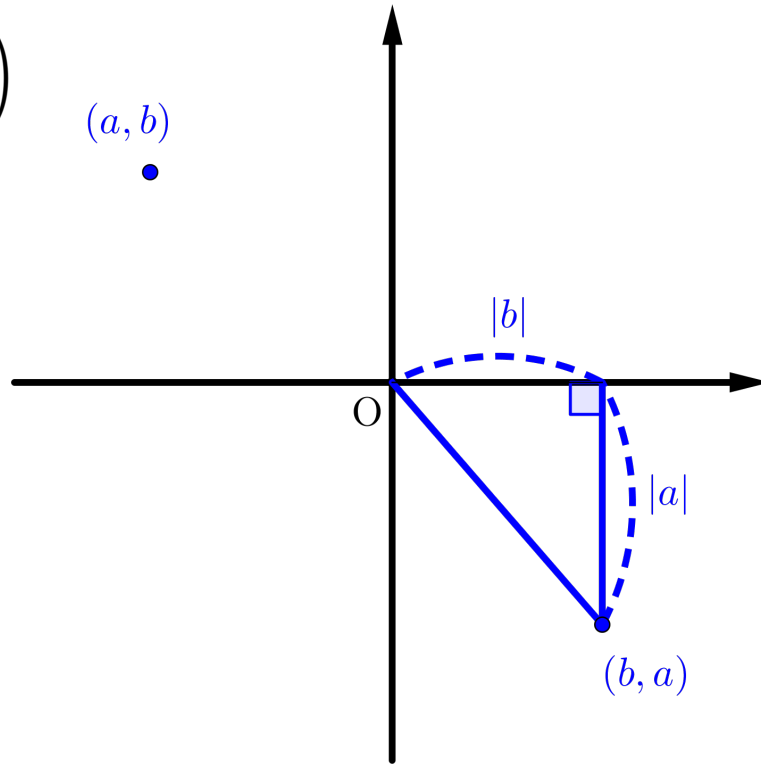
&\left(\cos\alpha = \frac{a}{\sqrt{a^2+b^2}},\quad \sin\alpha = \frac{b}{\sqrt{a^2+b^2}}\right)
\end{aligned}
$$

$a\sin\theta + b\cos\theta (ab \neq 0)$



Composition of Trigonometric Functions (Ggeneral Angle)

Start End

$$
\begin{aligned}
& a\sin\theta + b\cos\theta \ (ab \neq 0) \\
&= \sqrt{a^2+b^2}\left(\frac{a}{\sqrt{a^2+b^2}}\sin\theta + \frac{b}{\sqrt{a^2+b^2}}\cos\theta\right) \\
&= \sqrt{a^2+b^2}\,(\cos\alpha\sin\theta + \sin\alpha\cos\theta) \\
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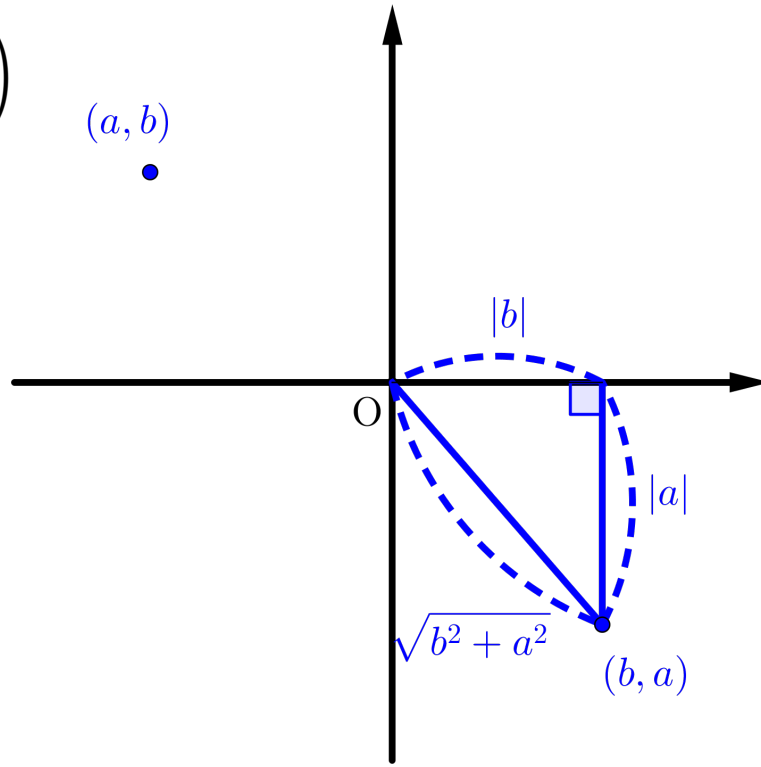

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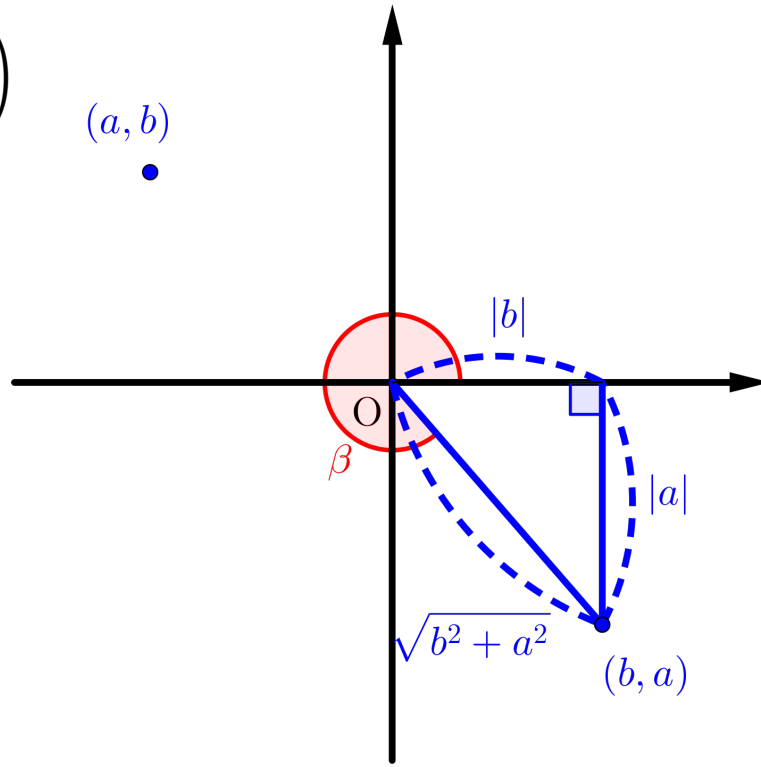

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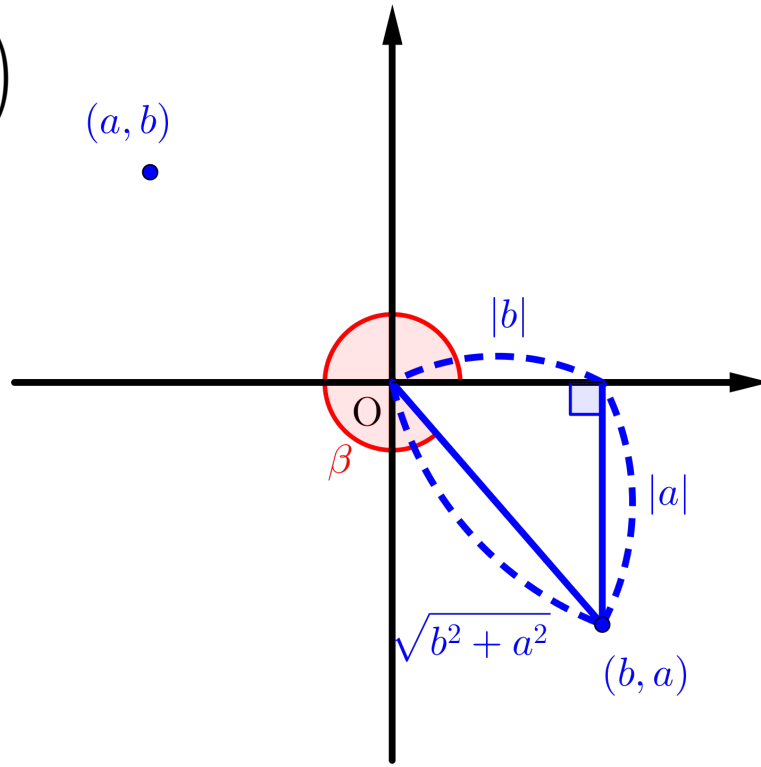

Composition of Trigonometric Functions (Ggeneral Angle)

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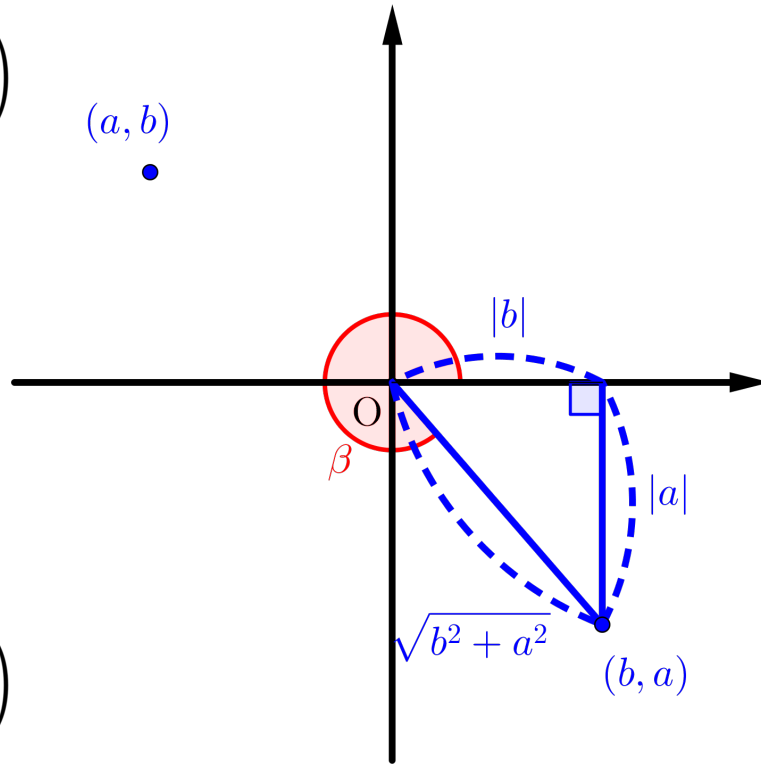


Composition of Trigonometric Functions (Ggeneral Angle)

Start End

$$a\sin\theta + b\cos\theta \ (ab \neq 0)$$

$$= \sqrt{a^2+b^2}\left(\frac{a}{\sqrt{a^2+b^2}}\sin\theta + \frac{b}{\sqrt{a^2+b^2}}\cos\theta\right)$$

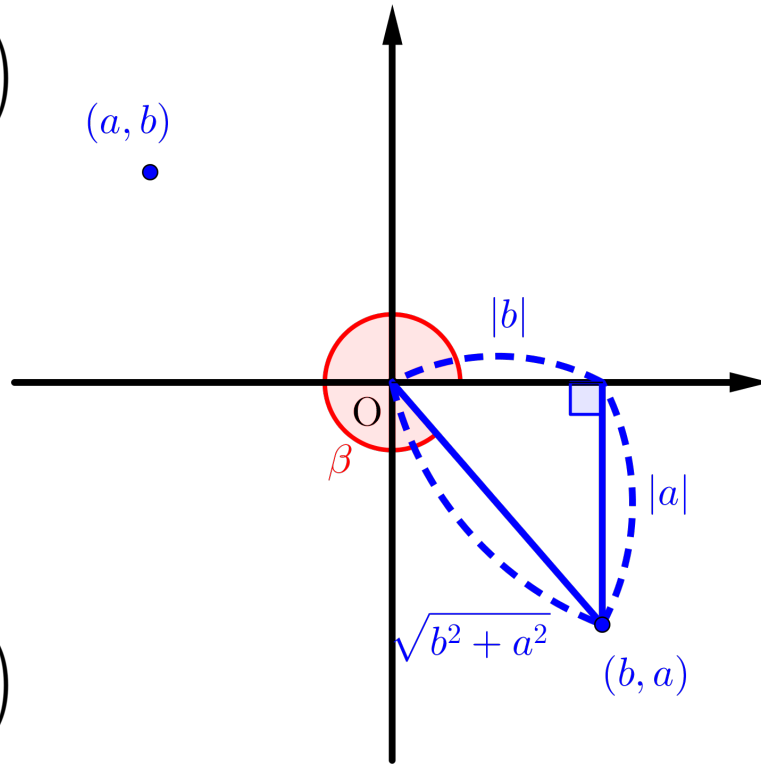
$$= \sqrt{a^2+b^2}\,(\cos\alpha\sin\theta + \sin\alpha\cos\theta)$$

$$= \sqrt{a^2+b^2}\,(\sin\theta\cos\alpha + \cos\theta\sin\alpha)$$

$$= \sqrt{a^2+b^2}\sin(\theta+\alpha)$$

$$\therefore\ a\sin\theta + b\cos\theta = \sqrt{a^2+b^2}\sin(\theta+\alpha)$$

$$\left(\cos\alpha = \frac{a}{\sqrt{a^2+b^2}},\quad \sin\alpha = \frac{b}{\sqrt{a^2+b^2}}\right)$$



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$$= \sqrt{a^2+b^2}\left(\frac{a}{\sqrt{a^2+b^2}}\sin\theta + \frac{b}{\sqrt{a^2+b^2}}\cos\theta\right)$$

$$= \sqrt{a^2+b^2}\,($$

Composition of Trigonometric Functions (Ggeneral Angle)

Start End

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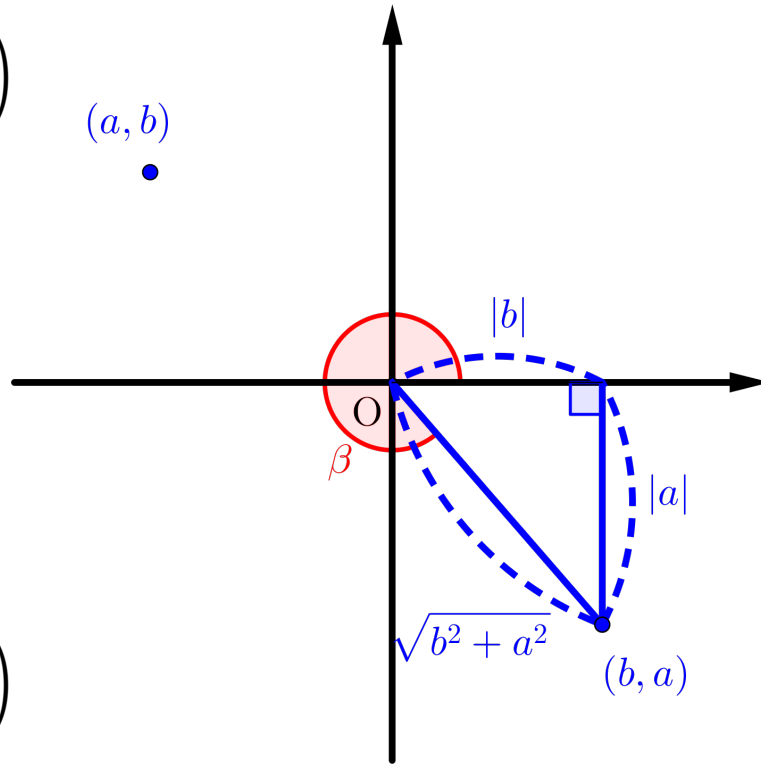
$$= \sqrt{a^2+b^2}\,(\sin\beta$$



Composition of Trigonometric Functions (Ggeneral Angle)

Start End

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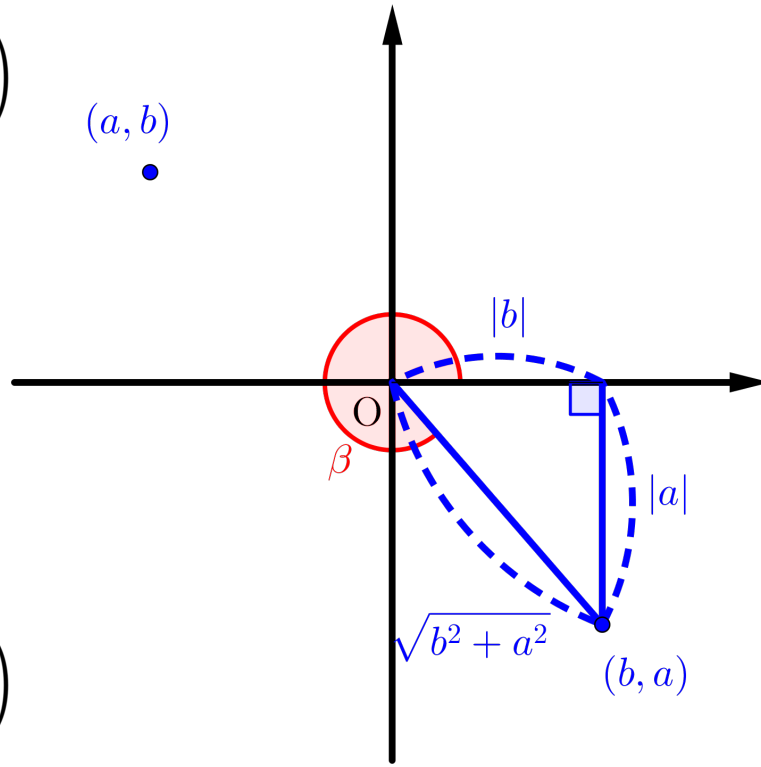
$$= \sqrt{a^2+b^2}\left(\frac{a}{\sqrt{a^2+b^2}}\sin\theta + \frac{b}{\sqrt{a^2+b^2}}\cos\theta\right)$$
$$= \sqrt{a^2+b^2}\,(\sin\beta\sin\theta +$$



Composition of Trigonometric Functions (Ggeneral Angle)

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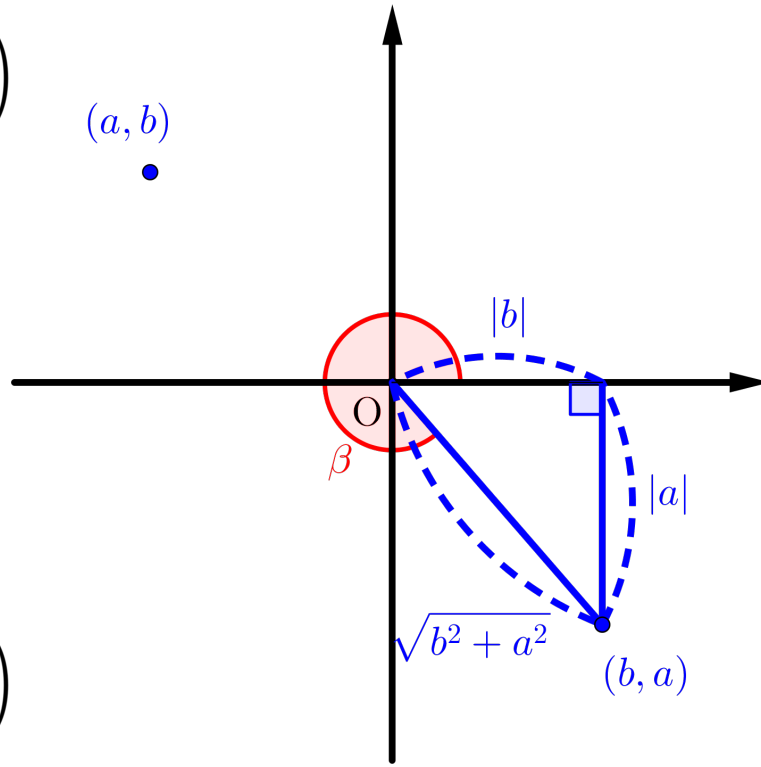

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\begin{aligned}
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\end{aligned}
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Composition of Trigonometric Functions (Ggeneral Angle)

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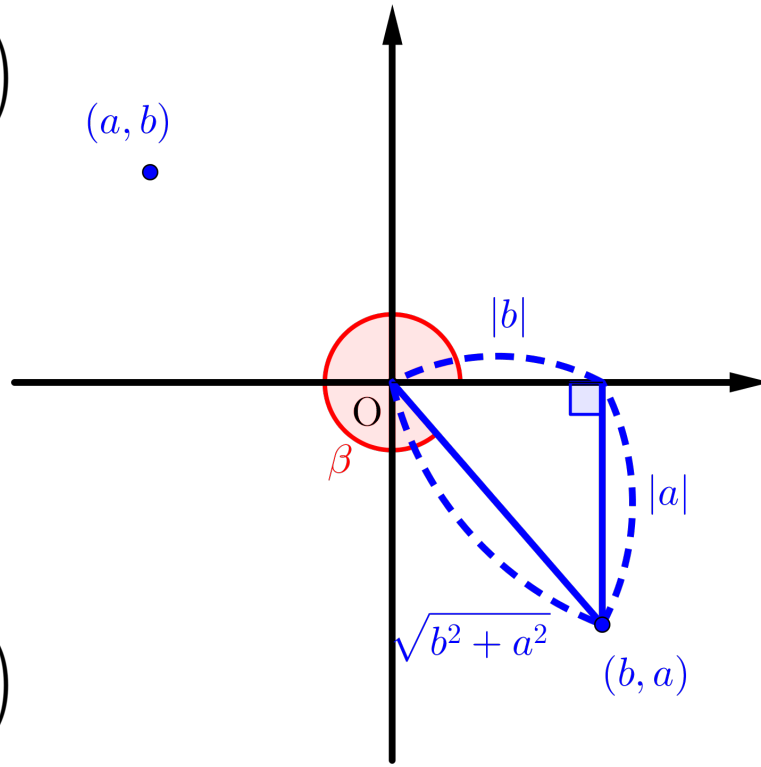

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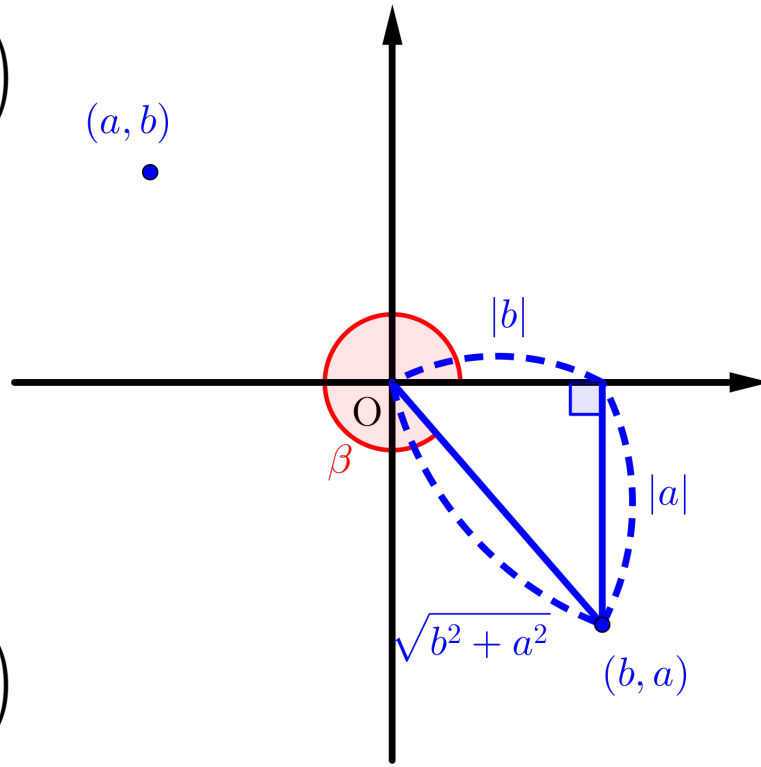

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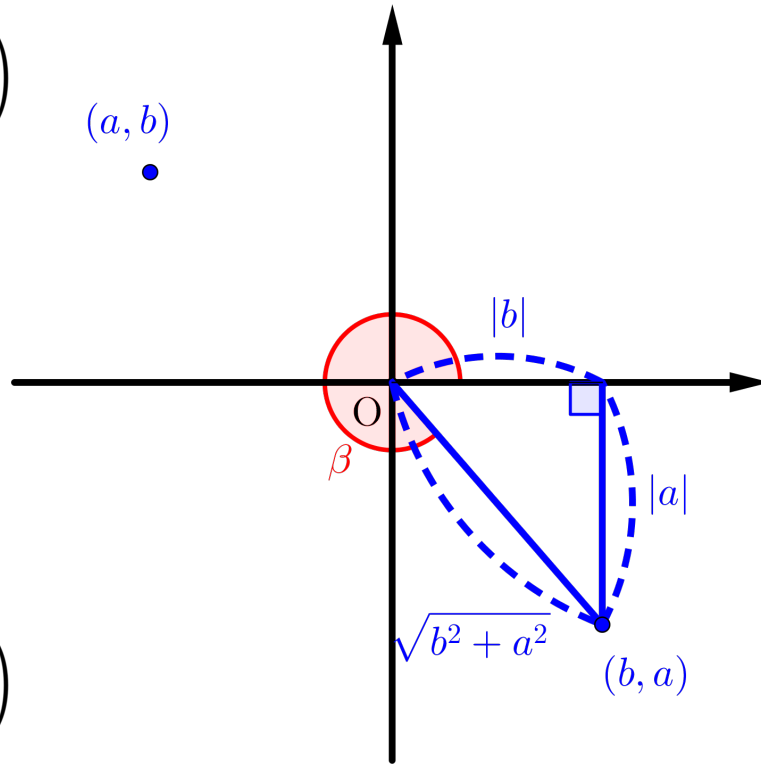

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Composition of Trigonometric Functions (Ggeneral Angle)

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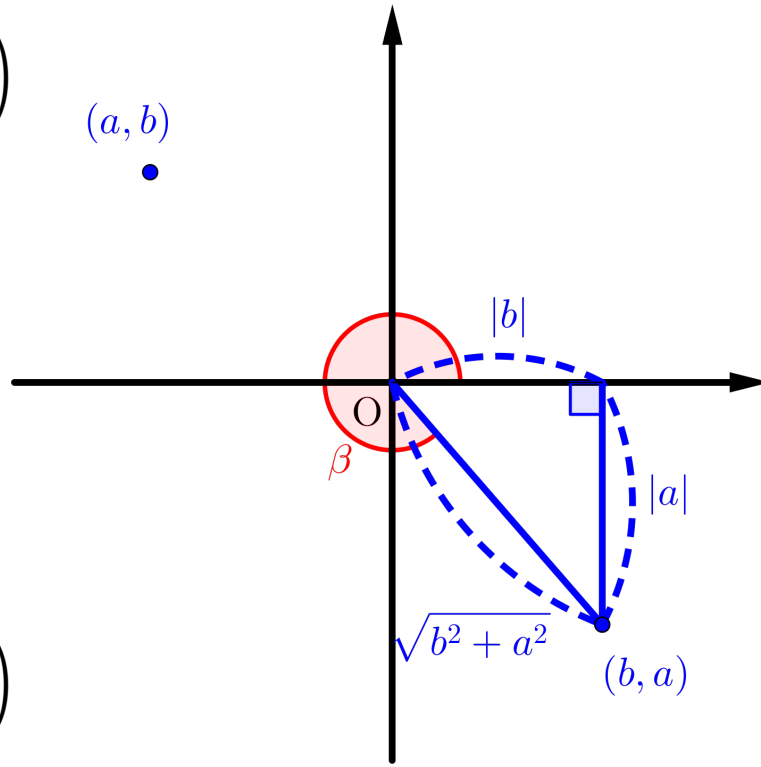

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Composition of Trigonometric Functions (Ggeneral Angle)

Start End

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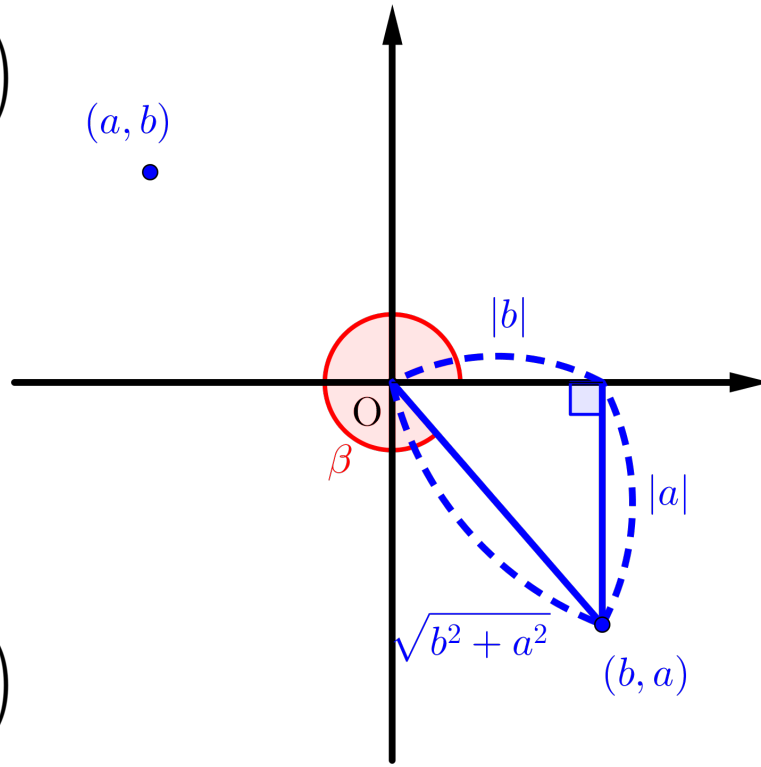

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Start End

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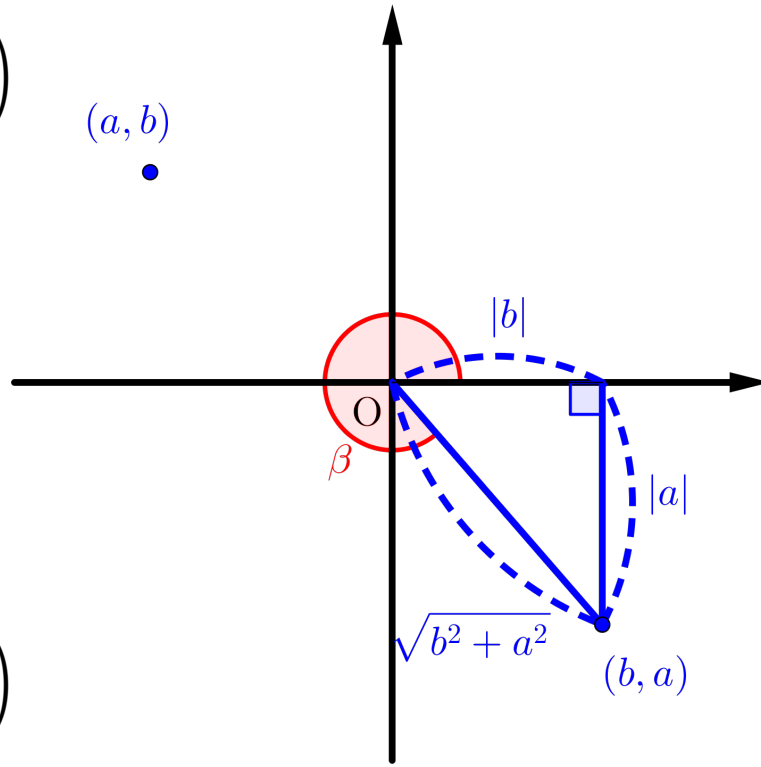

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Composition of Trigonometric Functions (Ggeneral Angle)

Start End

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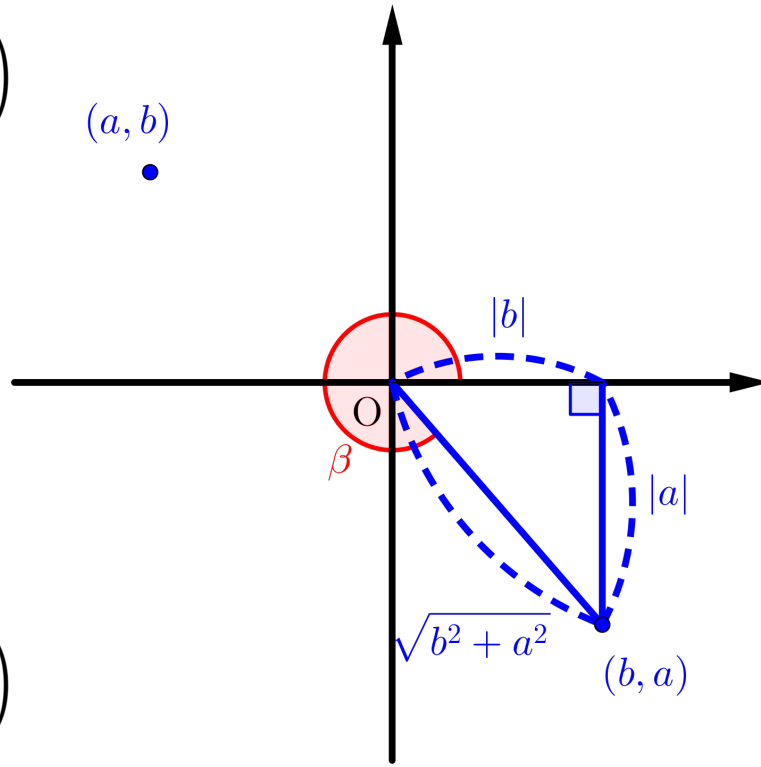
$$\therefore\ a\sin\theta + b\cos\theta = \sqrt{a^2+b^2}\cos(\theta-\beta)$$
$$\left(\cos\beta = \frac{b}{\sqrt{a^2+b^2}},\quad \sin\beta =\right.$$

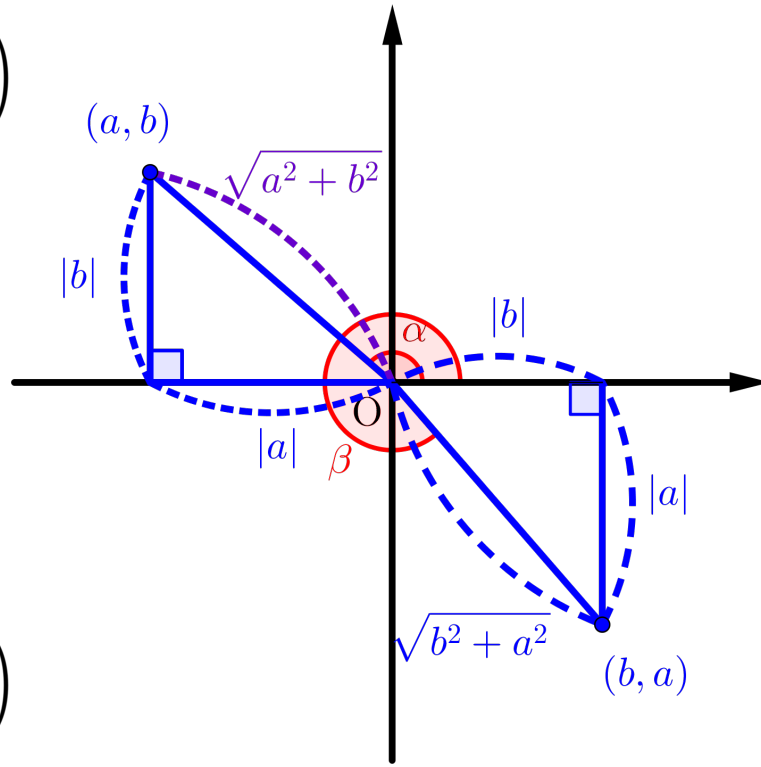


Composition of Trigonometric Functions (Ggeneral Angle)

Start End

$$a\sin\theta + b\cos\theta \ (ab \neq 0)$$
$$= \sqrt{a^2+b^2}\left(\frac{a}{\sqrt{a^2+b^2}}\sin\theta + \frac{b}{\sqrt{a^2+b^2}}\cos\theta\right)$$
$$= \sqrt{a^2+b^2}\,(\cos\alpha\sin\theta + \sin\alpha\cos\theta)$$
$$= \sqrt{a^2+b^2}\,(\sin\theta\cos\alpha + \cos\theta\sin\alpha)$$
$$= \sqrt{a^2+b^2}\sin(\theta+\alpha)$$
$$\therefore\ a\sin\theta + b\cos\theta = \sqrt{a^2+b^2}\sin(\theta+\alpha)$$
$$\left(\cos\alpha = \frac{a}{\sqrt{a^2+b^2}},\quad \sin\alpha = \frac{b}{\sqrt{a^2+b^2}}\right)$$

$$a\sin\theta + b\cos\theta (ab \neq 0)$$
$$= \sqrt{a^2+b^2}\left(\frac{a}{\sqrt{a^2+b^2}}\sin\theta + \frac{b}{\sqrt{a^2+b^2}}\cos\theta\right)$$
$$= \sqrt{a^2+b^2}\,(\sin\beta\sin\theta + \cos\beta\cos\theta)$$
$$= \sqrt{a^2+b^2}\,(\cos\theta\cos\beta + \sin\theta\sin\beta)$$
$$= \sqrt{a^2+b^2}\cos(\theta-\beta)$$
$$\therefore\ a\sin\theta + b\cos\theta = \sqrt{a^2+b^2}\cos(\theta-\beta)$$
$$\left(\cos\beta = \frac{b}{\sqrt{a^2+b^2}},\quad \sin\beta = \frac{a}{\sqrt{a^2+b^2}}\right)$$



Github:
https://min7014.github.io/math20230418001.html

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