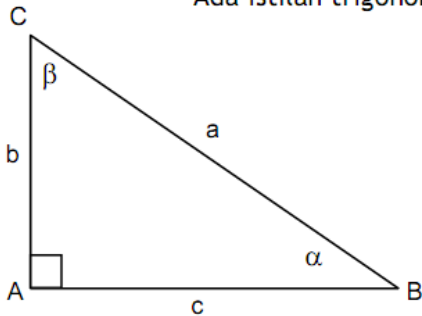


TRIGONOMETRI

Perhatikan segitiga siku-siku berikut ini:

Jika semua sisi-sisinya kita bandingkan, seperti a/b , b/c , a/c , c/b ,

Ada istilah trigonometri untuk menyatakan hal-hal itu, yakni:



$\sin \alpha = \frac{\text{depan}}{\text{miring}} = \frac{b}{a}$	$\operatorname{cosec} \alpha = \frac{1}{\sin \alpha} = \frac{a}{b}$
$\cos \alpha = \frac{\text{bawah}}{\text{miring}} = \frac{c}{a}$	$\sec \alpha = \frac{1}{\cos \alpha} = \frac{a}{c}$
$\tan \alpha = \frac{\sin \alpha}{\cos \alpha} = \frac{\text{depan}}{\text{bawah}} = \frac{b}{c}$	$\operatorname{cotg} \alpha = \frac{1}{\tan \alpha} = \frac{c}{b}$

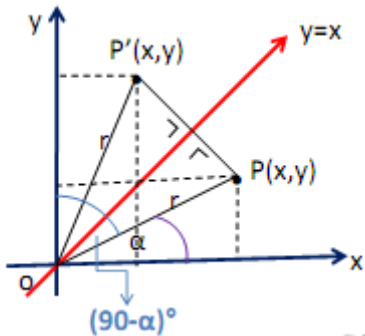
Dalam segitiga siku-siku, berlaku pula teori Phytagoras:

$$a^2 = b^2 + c^2$$

Dengan menggunakan pengertian diatas, tunjukkan bahwa:

1. $\sin^2 \alpha + \cos^2 \alpha = 1$
2. $\tan^2 \alpha + 1 = \sec^2 \alpha$
3. $\cot^2 \alpha + 1 = \operatorname{csc}^2 \alpha$

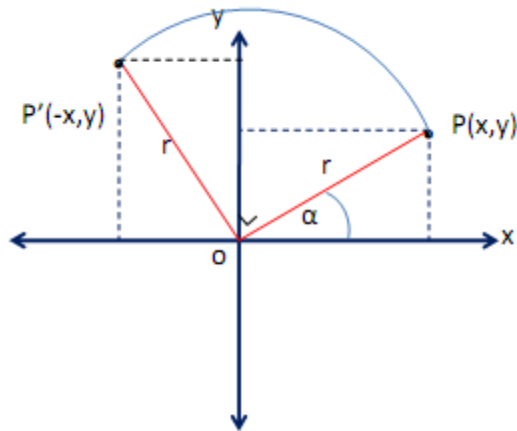
Selanjutnya perhatikan ilustrasi gambar untuk sudut $(90 - \alpha)^\circ$ berikut!



Tunjukkan (dapat dengan menggunakan bantuan gambar) sifat-sifat trigonometri berikut:

1. $\sin (90 - \alpha)^\circ = \cos \alpha^\circ$
2. $\cos (90 - \alpha)^\circ = \sin \alpha^\circ$
3. $\tan (90 - \alpha)^\circ = \cot \alpha^\circ$
4. $\sec (90 - \alpha)^\circ = \operatorname{csc} \alpha^\circ$

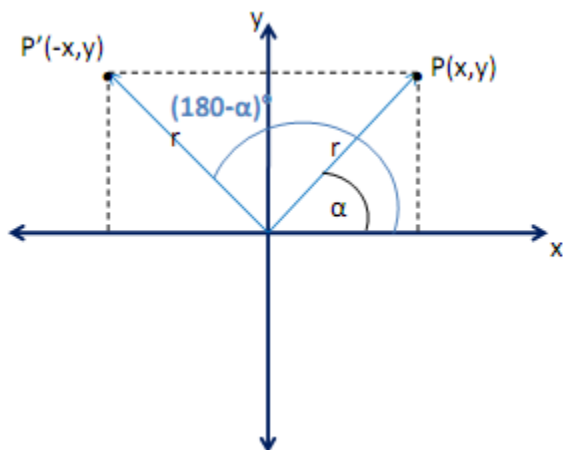
Selanjutnya perhatikan ilustrasi gambar untuk sudut $(90 + \alpha)^\circ$ berikut!



Tunjukkan (dapat dengan menggunakan bantuan gambar) sifat-sifat trigonometri berikut:

1. $\sin (90 + \alpha)^\circ = \cos \alpha^\circ$
2. $\cos (90 + \alpha)^\circ = -\sin \alpha^\circ$
3. $\tan (90 + \alpha)^\circ = -\cot \alpha^\circ$
4. $\sec (90 + \alpha)^\circ = -\csc \alpha^\circ$

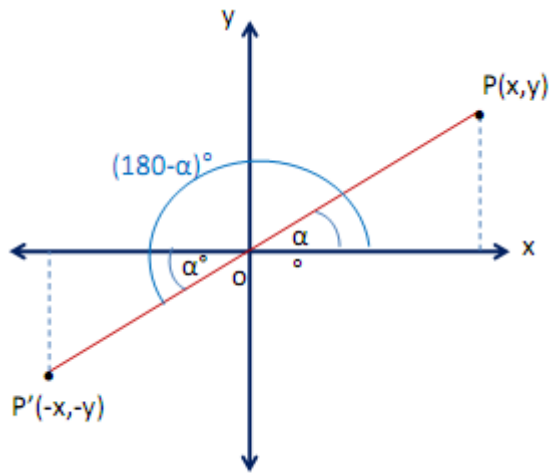
Selanjutnya perhatikan pula ilustrasi gambar untuk sudut $(180 - \alpha)^\circ$ berikut!



Tunjukkan bahwa:

1. $\sin (180 - \alpha)^\circ = \sin \alpha^\circ$
2. $\cos (180 - \alpha)^\circ = -\cos \alpha^\circ$
3. $\tan (180 - \alpha)^\circ = -\tan \alpha^\circ$
4. $\sec (180 - \alpha)^\circ = -\sec \alpha^\circ$

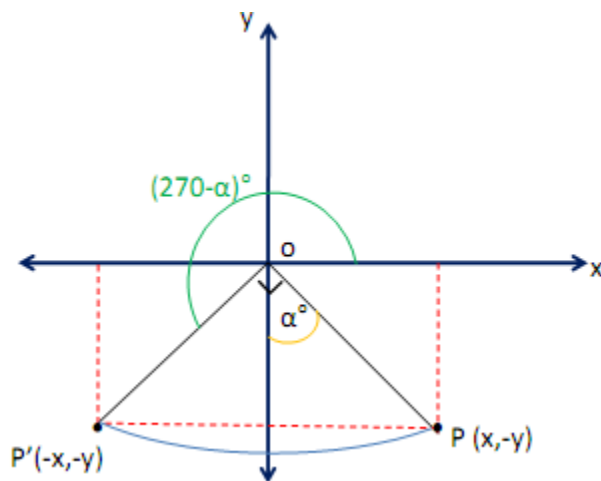
Perhatikan ilustrasi gambar untuk sudut $(180 + \alpha)^{\circ}$ berikut!



Tunjukkan bahwa:

1. $\sin (180 + \alpha)^{\circ} = - \sin \alpha^{\circ}$
2. $\cos (180 + \alpha)^{\circ} = - \cos \alpha^{\circ}$
3. $\tan (180 + \alpha)^{\circ} = \tan \alpha^{\circ}$
4. $\sec (180 + \alpha)^{\circ} = \sec \alpha^{\circ}$

Perhatikan ilustrasi gambar untuk sudut $(270 - \alpha)^{\circ}$ berikut!

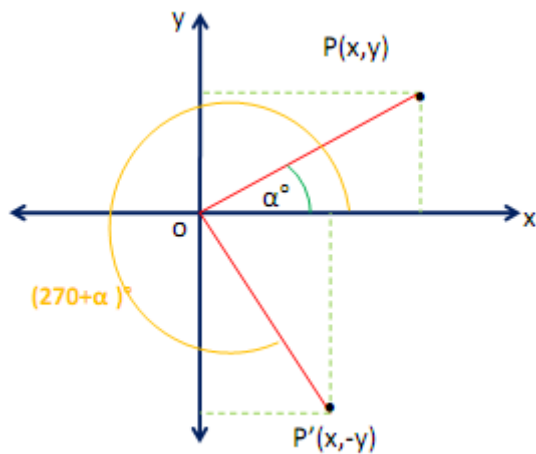


Tunjukkan bahwa:

1. $\sin (270 - \alpha)^{\circ} = - \sin \alpha^{\circ}$
2. $\cos (270 - \alpha)^{\circ} = - \cos \alpha^{\circ}$

3. $\tan (270 - \alpha)^{\circ} = \tan \alpha^{\circ}$
4. $\sec (270 - \alpha)^{\circ} = \sec \alpha^{\circ}$

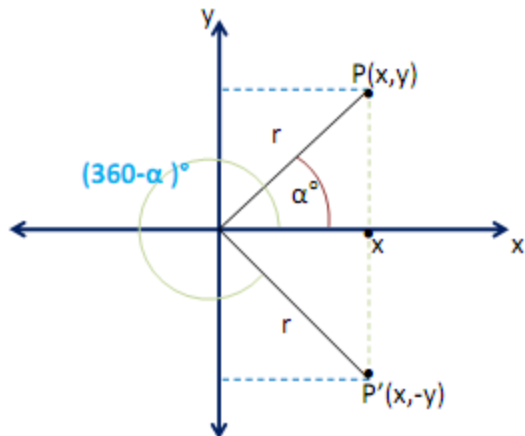
Perhatikan ilustrasi gambar untuk sudut $(270 + \alpha)^{\circ}$ berikut!



Tunjukkan bahwa:

1. $\sin (270 + \alpha)^{\circ} = -\cos \alpha^{\circ}$
2. $\cos (270 + \alpha)^{\circ} = \sin \alpha^{\circ}$
3. $\tan (270 + \alpha)^{\circ} = -\cot \alpha^{\circ}$
4. $\cot (270 + \alpha)^{\circ} = -\tan \alpha^{\circ}$

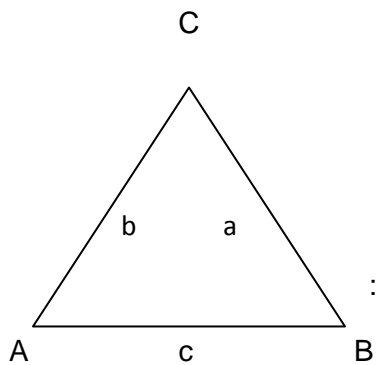
Perhatikan ilustrasi gambar untuk sudut $(360 - \alpha)^{\circ}$ berikut!



Tunjukkan bahwa:

1. $\sin (360 - \alpha)^{\circ} = -\sin \alpha^{\circ}$
2. $\cos (360 - \alpha)^{\circ} = \cos \alpha^{\circ}$
3. $\tan (360 - \alpha)^{\circ} = -\tan \alpha^{\circ}$
4. $\cot (360 - \alpha)^{\circ} = -\cot \alpha^{\circ}$

Tunjukkan berlakunya aturan sinus dan kosinus berikut pada segitiga!



Aturan Sinus:

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

Aturan Cosinus:

- a. $a^2 = b^2 + c^2 - 2bc \cos A$
- b. $b^2 = a^2 + c^2 - 2ac \cos B$
- c. $c^2 = a^2 + b^2 - 2ab \cos C$