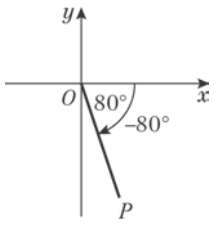
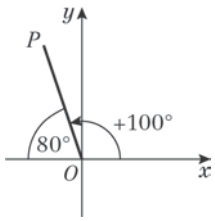
Trigonometric identities and equations 10A

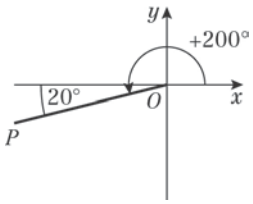
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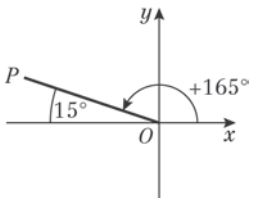
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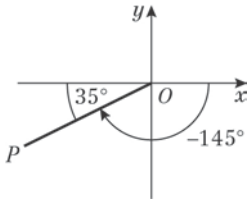
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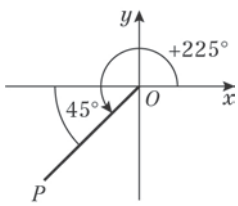
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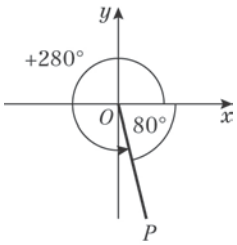
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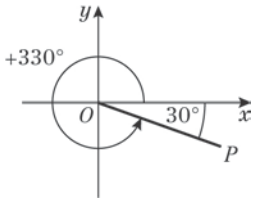
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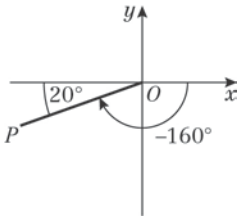
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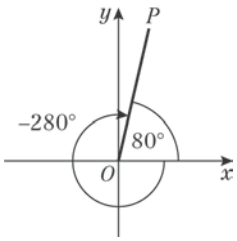
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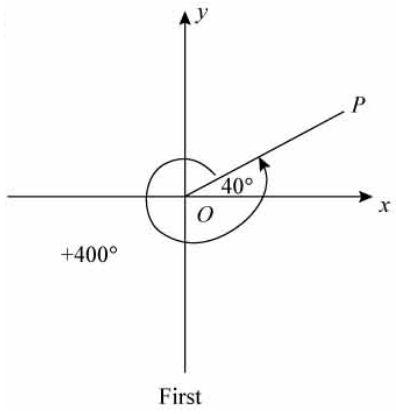
i



j

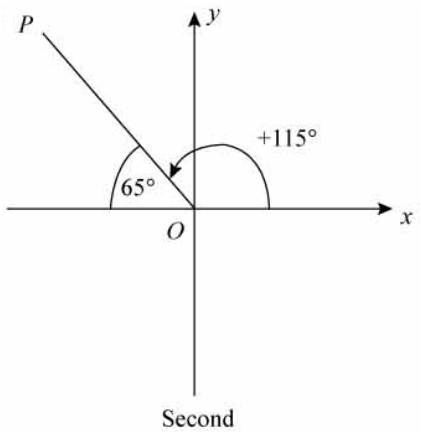


2 a

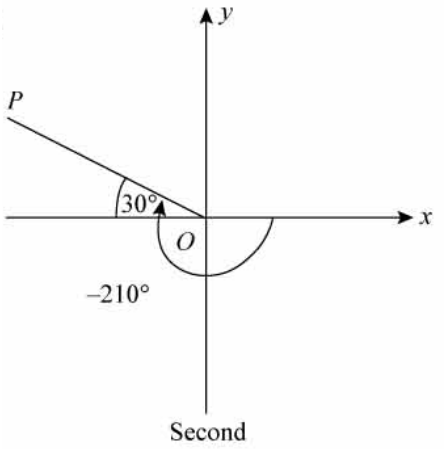


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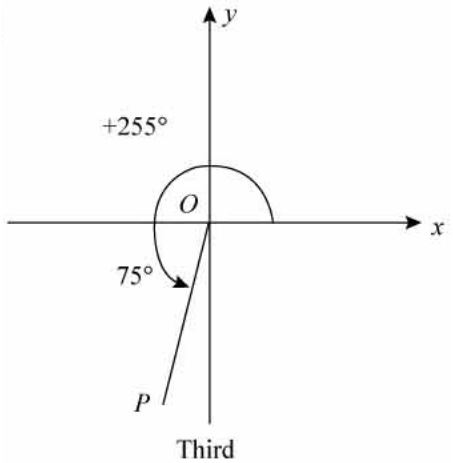
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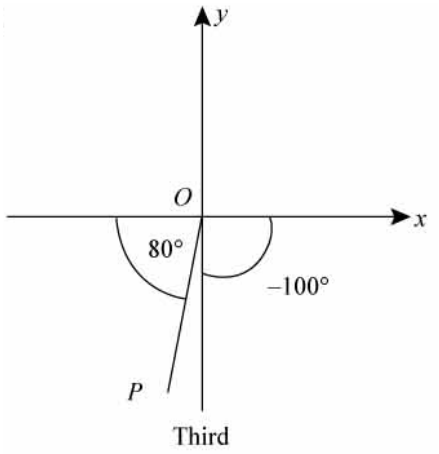
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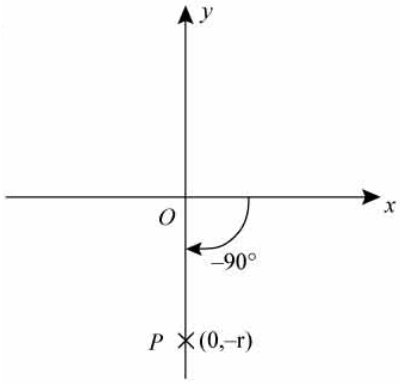
d



2 e

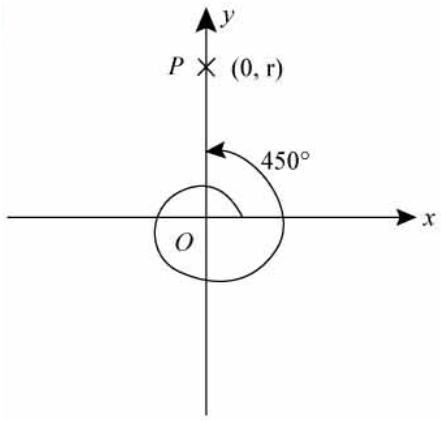


3 a



$$\sin(-90)^\circ = \frac{-r}{r} = -1$$

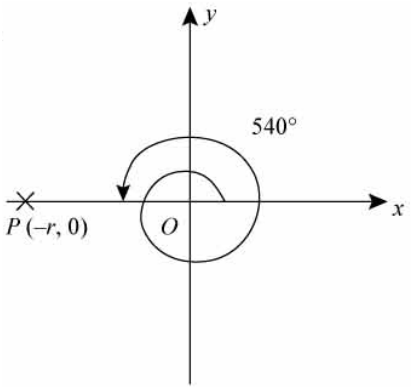
b



$$\sin 450^\circ = \frac{r}{r} = 1$$

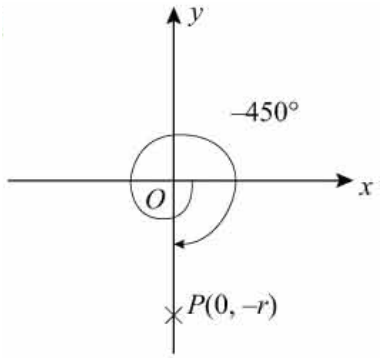
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3 c



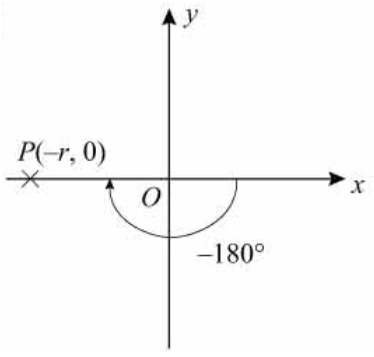
$$\sin 540° = \frac{0}{r} = 0$$

d



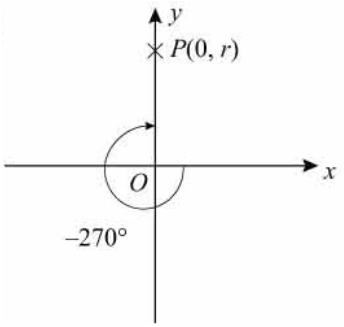
$$\sin(-450)° = \frac{-r}{r} = -1$$

e



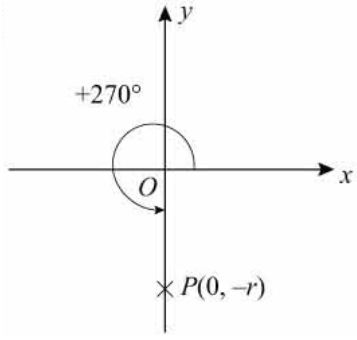
$$\cos(-180)° = \frac{-r}{r} = -1$$

f



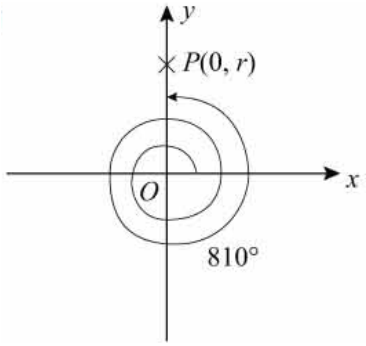
$$\cos(-270)° = \frac{0}{r} = 0$$

g



$$\cos 270° = \frac{0}{r} = 0$$

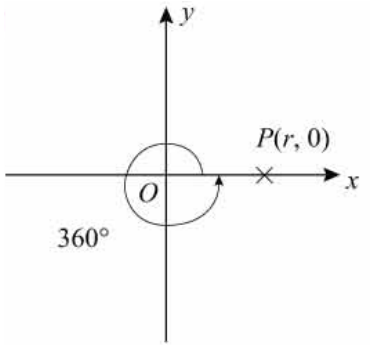
h



$$\cos 810° = \frac{0}{r} = 0$$

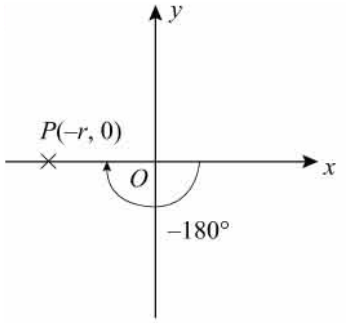
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3 i



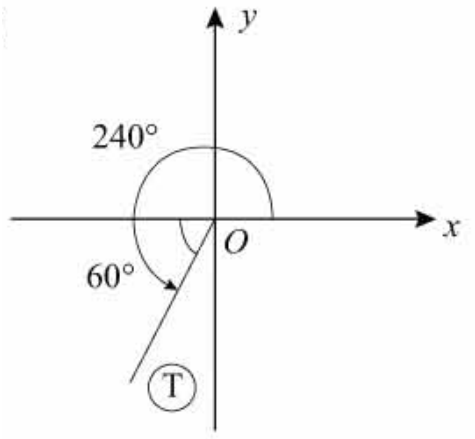
$\tan 360° = \frac{0}{r} = 0$

j



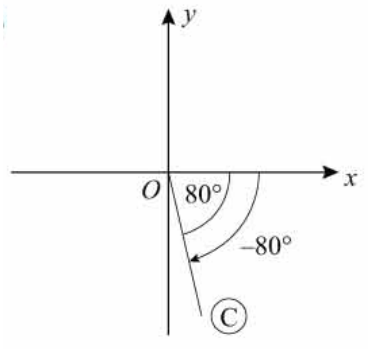
$\tan(-180)° = \frac{0}{-r} = 0$

4 a



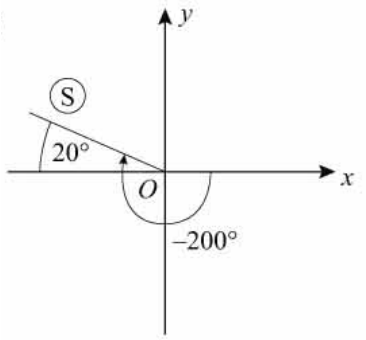
60° is the acute angle.
In the third quadrant sin is $-$ ve.
So $\sin 240° = -\sin 60°$

4 b



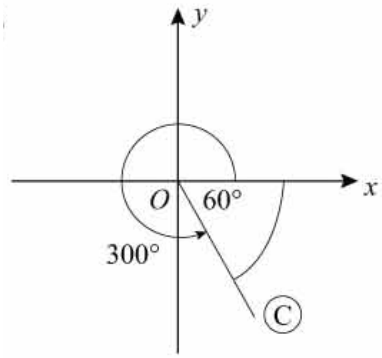
80° is the acute angle.
In the fourth quadrant sin is $-$ ve.
So $\sin(-80)° = -\sin 80°$

c



20° is the acute angle.
In the second quadrant sin is $+$ ve.
So $\sin(-200)° = +\sin 20°$

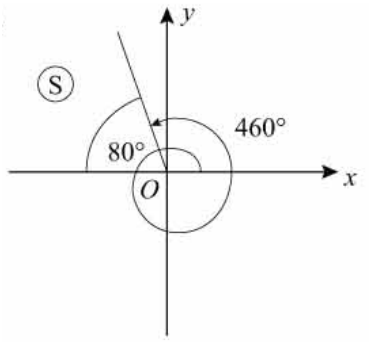
d



60° is the acute angle.
In the fourth quadrant sin is $-$ ve.
So $\sin 300° = -\sin 60°$

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4 e

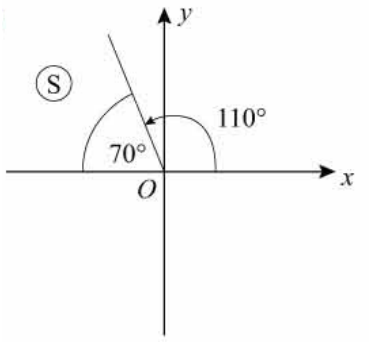


80° is the acute angle.

In the second quadrant sin is $+$ ve.

So $\sin 460° = +\sin 80°$

f

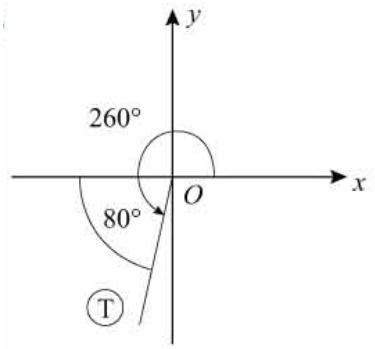


70° is the acute angle.

In the second quadrant cos is $-$ ve.

So $\cos 110° = -\cos 70°$

g

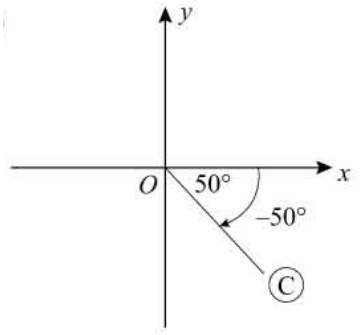


80° is the acute angle.

In the third quadrant cos is $-$ ve.

So $\cos 260° = -\cos 80°$

h

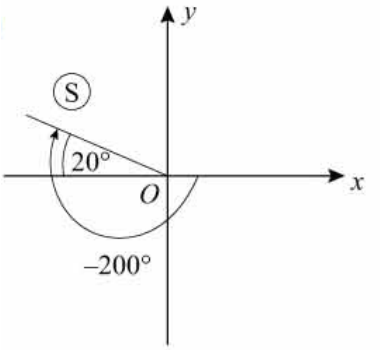


50° is the acute angle.

In the fourth quadrant cos is $+$ ve.

So $\cos(-50)° = +\cos 50°$

i

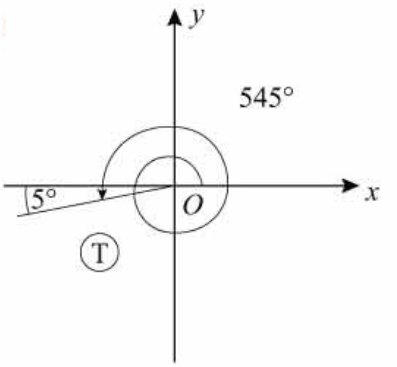


20° is the acute angle.

In the second quadrant cos is $-$ ve.

So $\cos(-200)° = -\cos 20°$

j



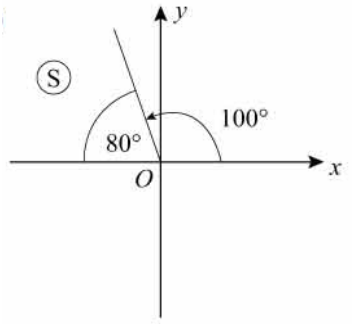
5° is the acute angle.

In the third quadrant cos is $-$ ve.

So $\cos 545° = -\cos 5°$

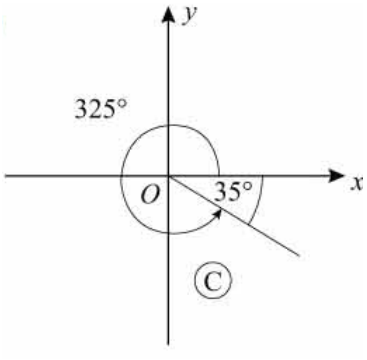
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4 k



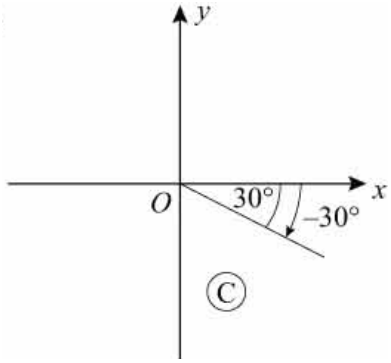
80° is the acute angle.
In the second quadrant tan is $-$ ve.
So $\tan 100° = -\tan 80°$

l



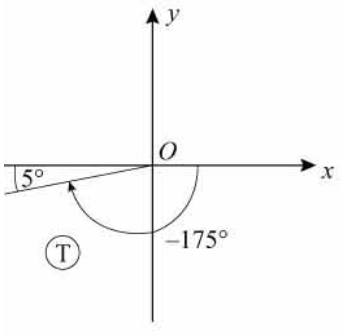
35° is the acute angle.
In the fourth quadrant tan is $-$ ve.
So $\tan 325° = -\tan 35°$

m



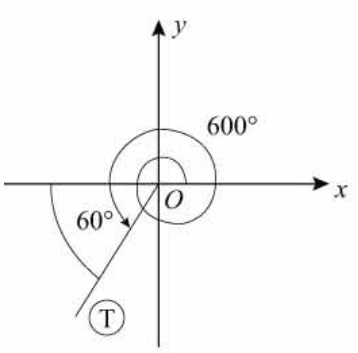
30° is the acute angle.
In the fourth quadrant tan is $-$ ve.
So $\tan(-30)° = -\tan 30°$

n



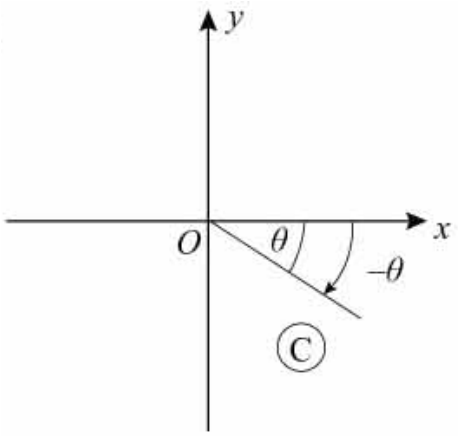
5° is the acute angle.
In the third quadrant tan is $+$ ve.
So $\tan(-175)° = +\tan 5°$

o



60° is the acute angle.
In the third quadrant tan is $+$ ve.
So $\tan 600° = +\tan 60°$

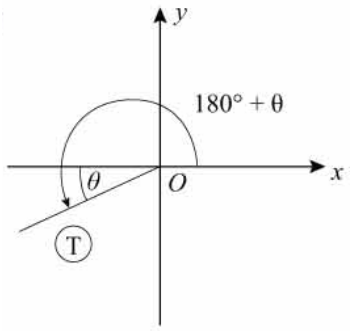
5 a



sin is $-$ ve in this quadrant.
So $\sin(-\theta) = -\sin\theta$

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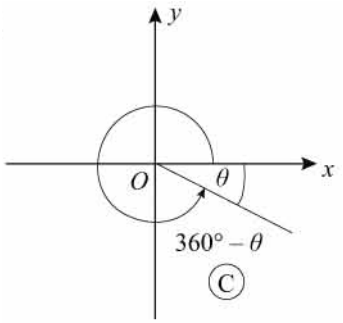
5 b



sin is $-$ve in this quadrant.

So $\sin(180° + \theta) = -\sin\theta$

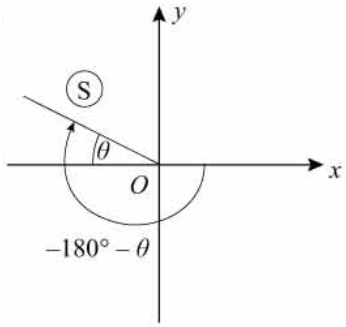
c



sin is $-$ve in this quadrant.

So $\sin(360° - \theta) = -\sin\theta$

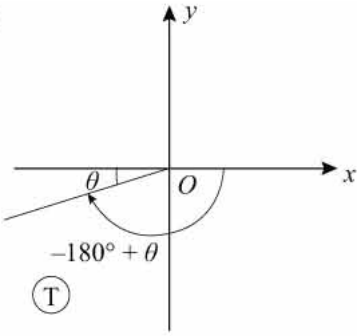
d



sin is $+$ve in this quadrant.

So $\sin-(180° + \theta) = +\sin\theta$

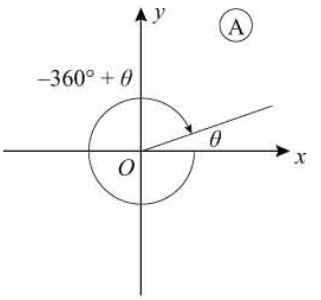
e



sin is $-$ve in this quadrant.

So $\sin(-180° + \theta) = -\sin\theta$

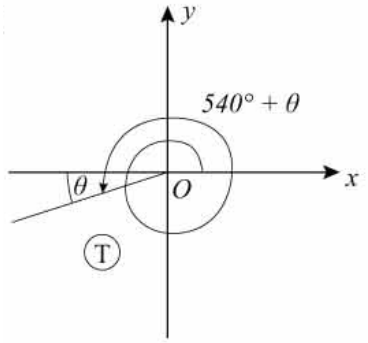
f



sin is $+$ve in this quadrant.

So $\sin(-360° + \theta) = +\sin\theta$

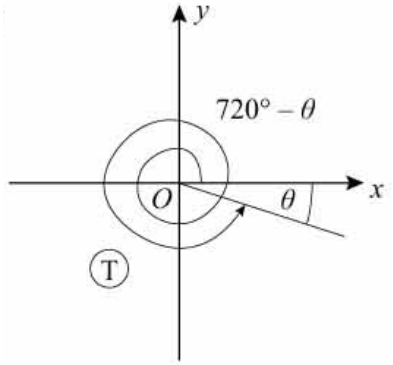
g



sin is $-$ve in this quadrant.

So $\sin(540° + \theta) = -\sin\theta$

h



sin is $+$ve in this quadrant.

So $\sin(720° - \theta) = -\sin\theta$

i $\theta + 720°$ is in the first quadrant with θ to the horizontal.

So $\sin(\theta + 720°) = +\sin\theta$

6 a $180° - \theta$ is in the second quadrant where cos is –ve, and the angle to the horizontal is θ.

So $\cos(180° - \theta) = -\cos\theta$

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6 b $180° + \theta$ is in the third quadrant, at θ to the horizontal.
So $\cos(180° + \theta) = -\cos\theta$

c $-\theta$ is in the fourth quadrant, at θ to the horizontal.
So $\cos(-\theta) = +\cos\theta$

d $-(180° - \theta)$ is in the third quadrant, at θ to the horizontal.
So $\cos -(180° - \theta) = -\cos\theta$

e $\theta - 360°$ is in the first quadrant, at θ to the horizontal.
So $\cos(\theta - 360°) = \cos\theta$

f $\theta - 540°$ is in the third quadrant, at θ to the horizontal.
So $\cos(\theta - 540°) = -\cos\theta$

g $-\theta$ is in the fourth quadrant.
So $\tan(-\theta) = -\tan\theta$

h $(180° - \theta)$ is in the second quadrant.
So $\tan(180° - \theta) = -\tan\theta$

i $(180° + \theta)$ is in the third quadrant.
So $\tan(180° + \theta) = +\tan\theta$

j $(-180° + \theta)$ is in the third quadrant.
So $\tan(-180° + \theta) = +\tan\theta$

k $(540° - \theta)$ is in the second quadrant.
So $\tan(540° - \theta) = -\tan\theta$

l $(\theta - 360°)$ is in the first quadrant.
So $\tan(\theta - 360°) = +\tan\theta$

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