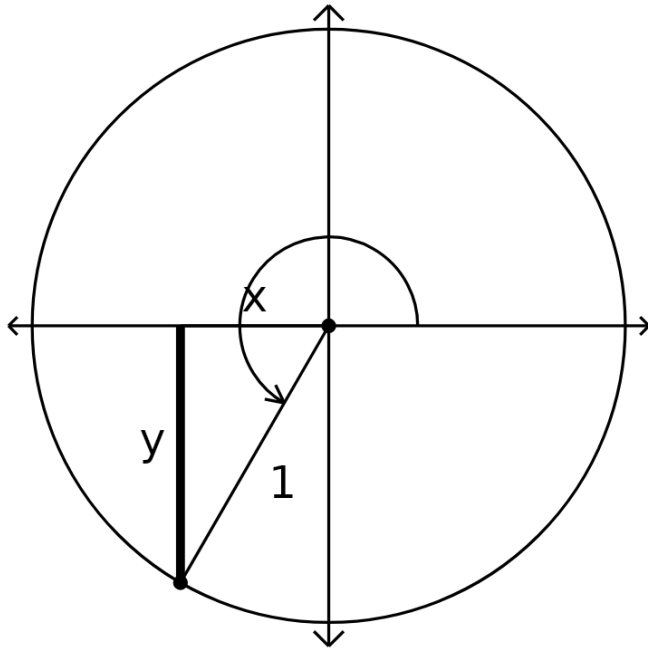




Trigonometric Identities - Intro

1 What does Pythagoras tell us about the Y dimension of this triangle?



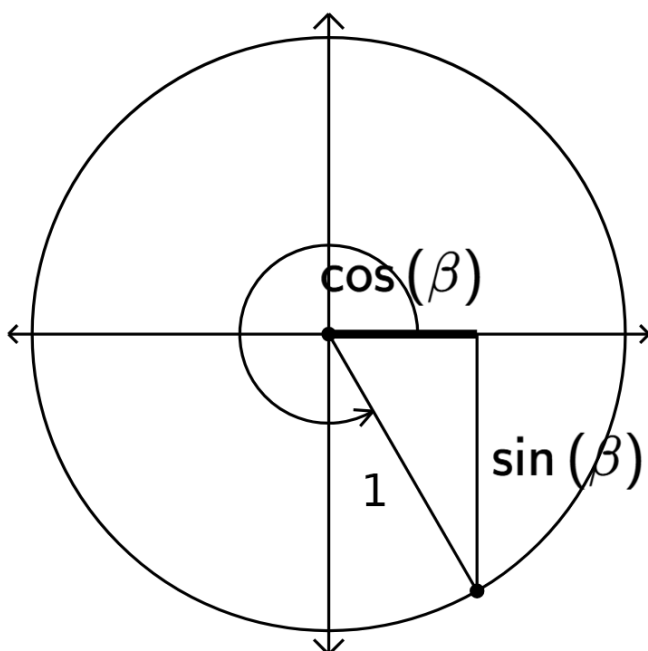
A

$$y = \sqrt{x^2 + 1}$$

B

$$y = \sqrt{1 - x^2}$$

2 What does Pythagoras tell us about the X dimension of this triangle?



A

$$(\cos(\beta))^2 = 1 - (\sin(\beta))^2$$

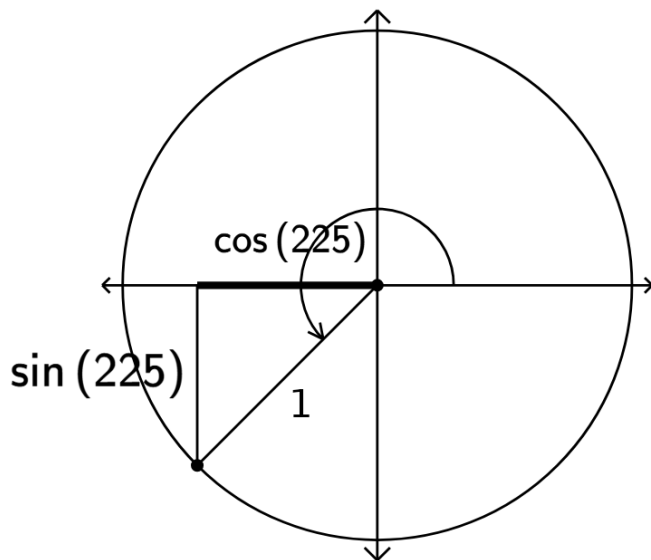
B

$$(\cos(\beta))^2 = 1 + (\sin(\beta))^2$$



Trigonometric Identities - Intro

3 What does Pythagoras tell us about the X dimension of this triangle?



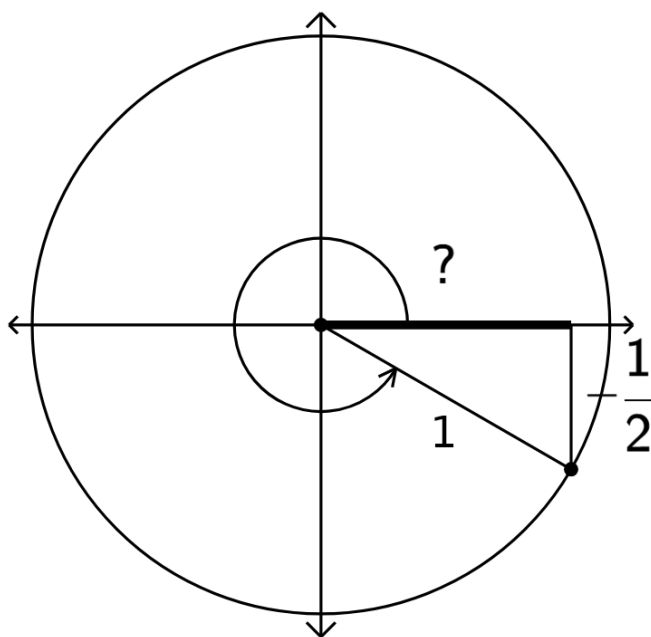
A

$$\cos(225^\circ) = \sqrt{1 - \sin^2(225^\circ)}$$

B

$$\cos(225^\circ) = \sqrt{\sin^2(225^\circ) + 1}$$

4 What does Pythagoras tell us about the X dimension of this triangle?



A

$$\cos(330^\circ) = \sqrt{1 - \left(-\frac{1}{2}\right)^2}$$

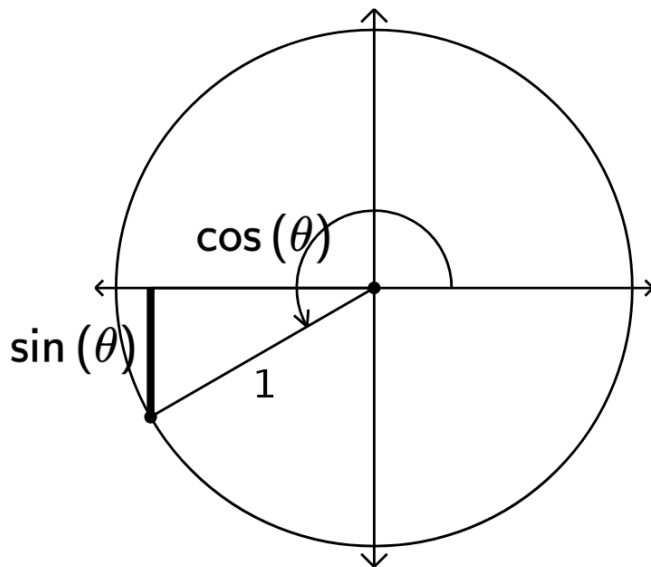
B

$$\cos(330^\circ) = \sqrt{\left(-\frac{1}{2}\right)^2 + 1}$$



Trigonometric Identities - Intro

5 What does Pythagoras tell us about the Y dimension of this triangle?



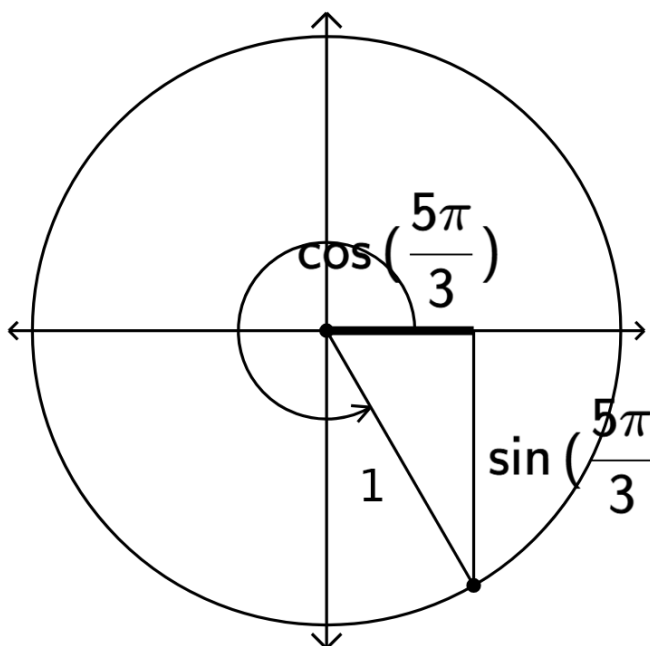
A

$$(\sin(\theta))^2 = 1 + (\cos(\theta))^2$$

B

$$(\sin(\theta))^2 = 1 - (\cos(\theta))^2$$

6 What does Pythagoras tell us about the X dimension of this triangle?



A

$$\cos\left(\frac{5\pi}{3}\right) = \sqrt{1 - \sin^2\left(\frac{5\pi}{3}\right)}$$

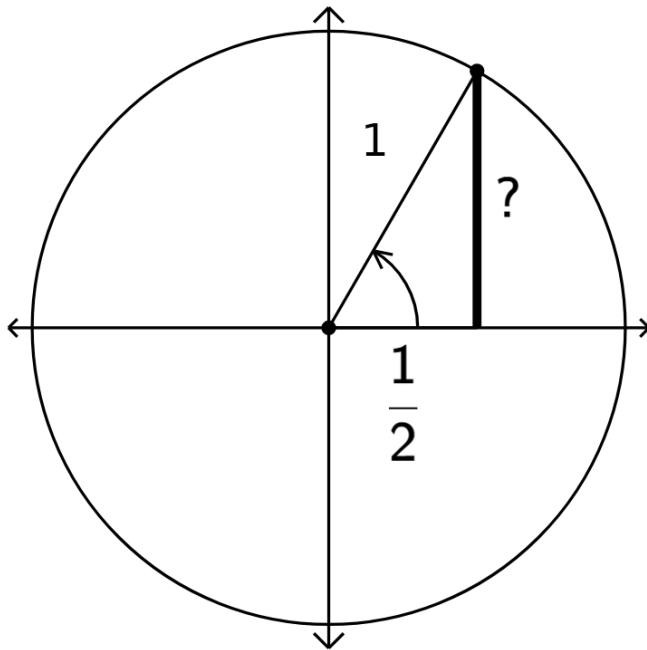
B

$$\cos\left(\frac{5\pi}{3}\right) = \sqrt{\sin^2\left(\frac{5\pi}{3}\right) + 1}$$



Trigonometric Identities - Intro

7 What does Pythagoras tell us about the Y dimension of this triangle?



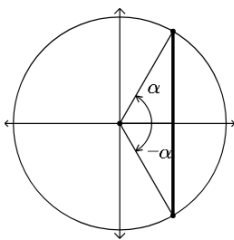
A

$$\sin\left(\frac{\pi}{3}\right) = \sqrt{1 - \left(\frac{1}{2}\right)^2}$$

B

$$\sin\left(\frac{\pi}{3}\right) = \sqrt{\left(\frac{1}{2}\right)^2 + 1}$$

8 What is true about the sine of this negative angle?



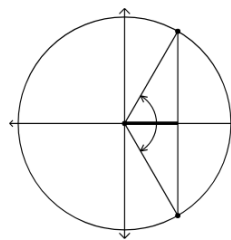
A

$$\sin(-\alpha) = \sin(\alpha)$$

B

$$\sin(-\alpha) = -\sin(\alpha)$$

9 What is true about the cosine of this negative angle?



A

$$\cos(-60^\circ) = \cos(60^\circ)$$

B

$$\cos(-60^\circ) = -\cos(60^\circ)$$

10 What is true about the cosine of this negative angle?
 $\cos(-\alpha)$

A

$$\cos(-\alpha) = -\cos(\alpha)$$

B

$$\cos(-\alpha) = \cos(\alpha)$$

11 What is true about the cosine of this negative angle?

$$\cos\left(-\frac{5\pi}{6}\right)$$

A

$$\cos\left(-\frac{5\pi}{6}\right) = -\cos\left(\frac{5\pi}{6}\right)$$

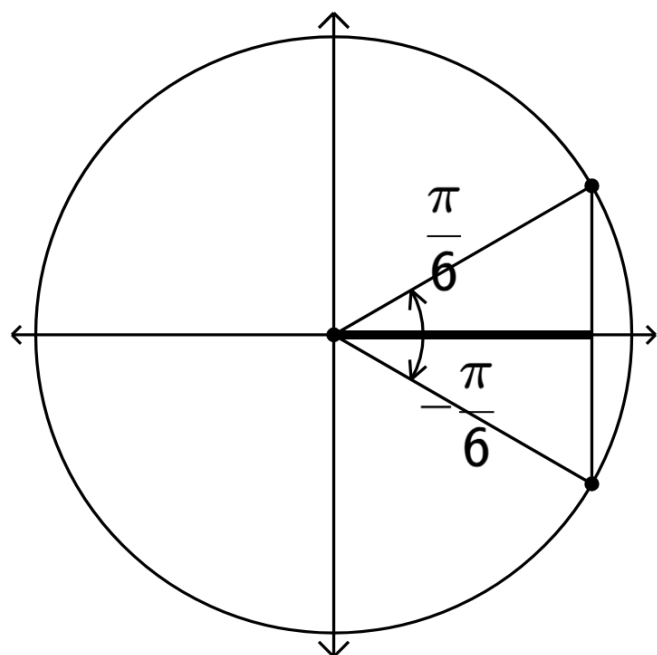
B

$$\cos\left(-\frac{5\pi}{6}\right) = \cos\left(\frac{5\pi}{6}\right)$$



Trigonometric Identities - Intro

12 What is true about the cosine of this negative angle?



A

$$\cos\left(-\frac{\pi}{6}\right) = -\cos\left(\frac{\pi}{6}\right)$$

B

$$\cos\left(-\frac{\pi}{6}\right) = \cos\left(\frac{\pi}{6}\right)$$

13 What is true about the cosine of this negative angle?

$$\cos(-30^\circ)$$

A

$$\cos(-30^\circ) = \cos(30^\circ)$$

B

$$\cos(-30^\circ) = -\cos(30^\circ)$$

14 What is true about the secant of this negative angle?

$$\sec(-\beta)$$

A

$$\sec(-\beta) = -\sec(\beta)$$

B

$$\sec(-\beta) = \sec(\beta)$$

15 What is true about the cosecant of this negative angle?

$$\csc\left(-\frac{\pi}{6}\right)$$

A

$$\csc\left(-\frac{\pi}{6}\right) = -\csc\left(\frac{\pi}{6}\right)$$

B

$$\csc\left(-\frac{\pi}{6}\right) = \csc\left(\frac{\pi}{6}\right)$$

16 What is true about the cotangent of this negative angle?

$$\cot(-135^\circ)$$

A

$$\cot(-135^\circ) = \cot(135^\circ)$$

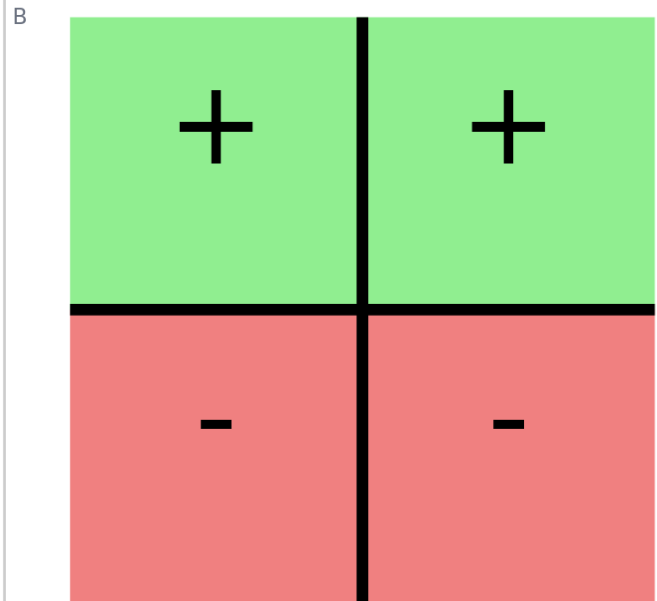
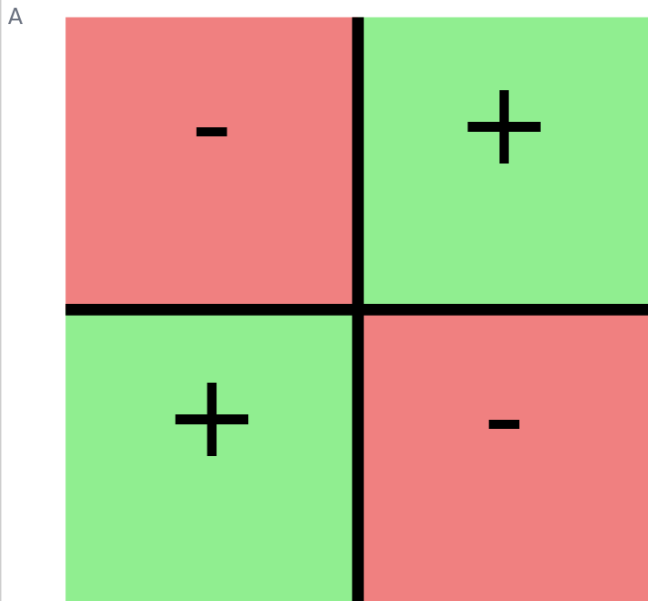
B

$$\cot(-135^\circ) = -\cot(135^\circ)$$

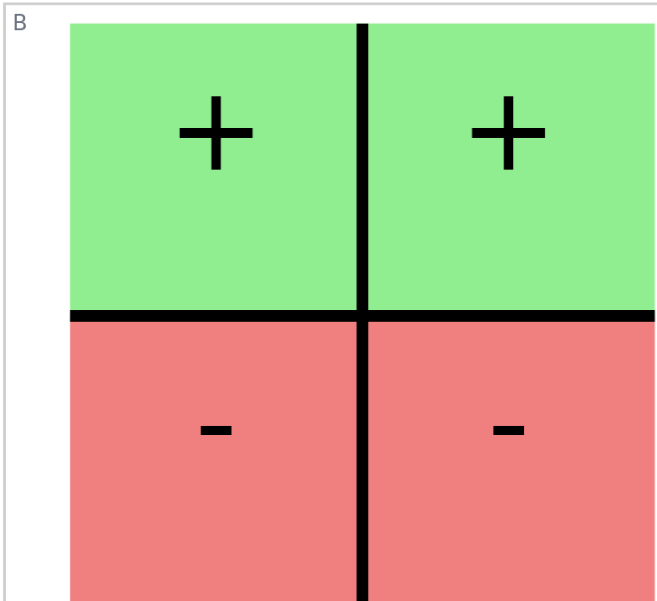
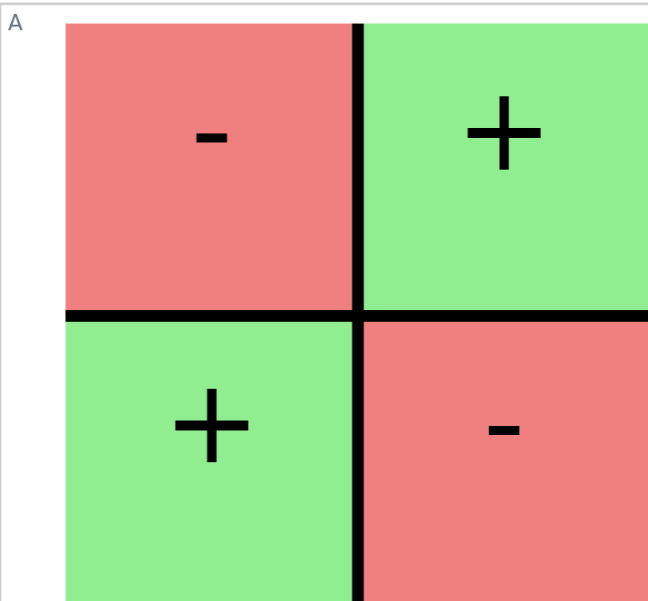


Trigonometric Identities - Intro

17 In which quadrants is this trig ratio positive/negative?
 $\sin(\alpha)$



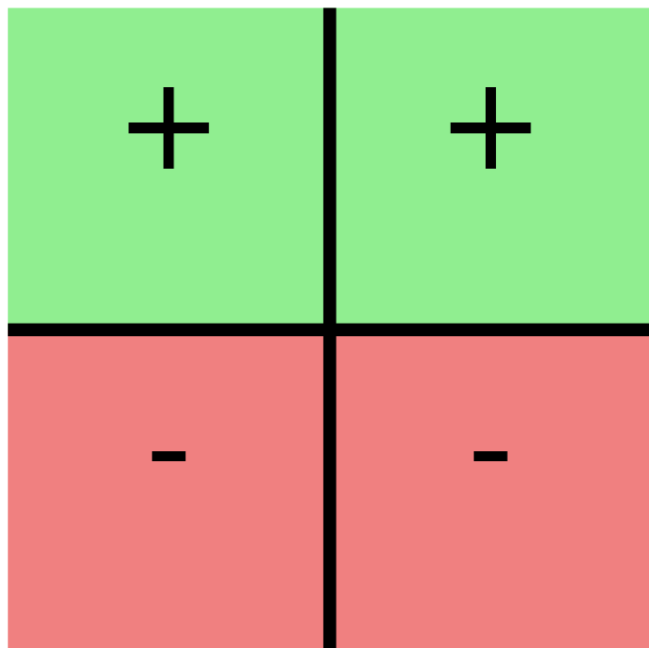
18 In which quadrants is this trig ratio positive/negative?
 $\csc(\theta)$





Trigonometric Identities - Intro

19 Which trig ratio would have these signs by quadrant?



A

$$\cos(\theta)$$

B

$$\sin(\theta)$$

20 Complete the pythagorean trig identity for this expression

$$\cos^2(\theta)$$

A

$$= 1 - \sin^2(\theta)$$

B

$$= \sin^2(\theta) - 1$$

21 Is this pythagorean trig identity correct?

$$\cos^2(\theta) = 1 - \sin^2(\theta)$$

A

No

B

Yes

22 Complete the pythagorean trig identity for this expression

$$\cos^2(30^\circ)$$

A

$$= \sin^2(30^\circ) + 1$$

B

$$= 1 - \sin^2(30^\circ)$$

23 Is this pythagorean trig identity correct?

$$\cos^2(315^\circ) = \sin^2(315^\circ) - 1$$

A

Yes

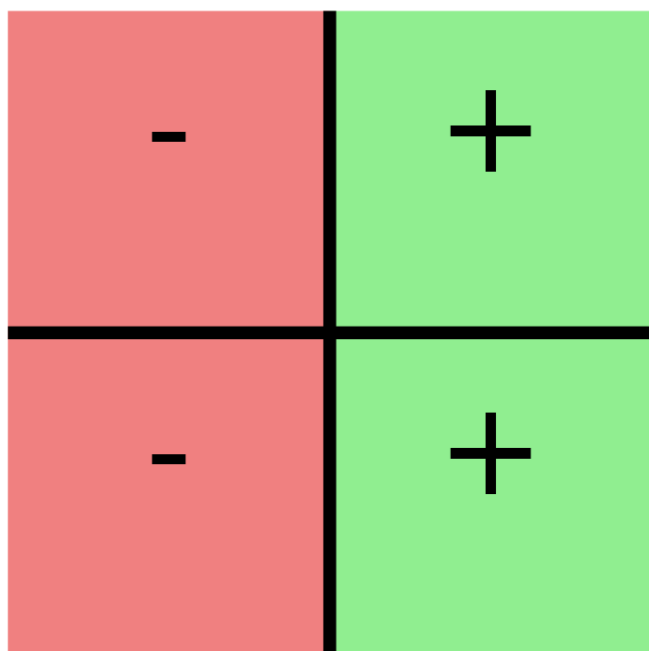
B

No



Trigonometric Identities - Intro

24 Which trig ratio would have these signs by quadrant?



A

$$\csc(\theta)$$

B

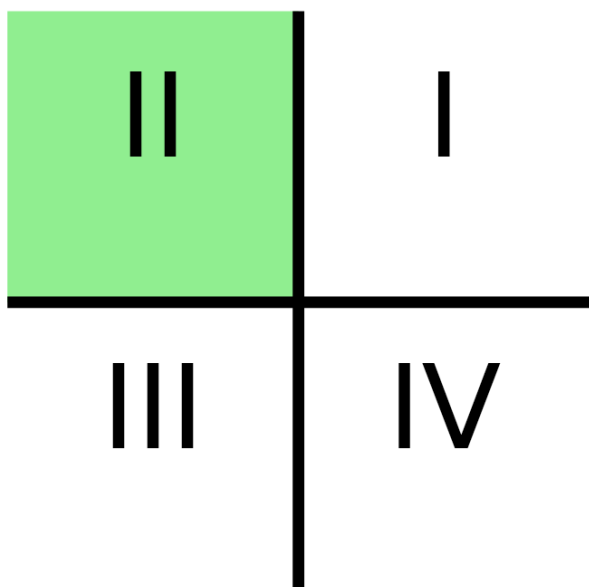
$$\sec(\theta)$$

25 In which quadrant would these trig ratios have these signs?

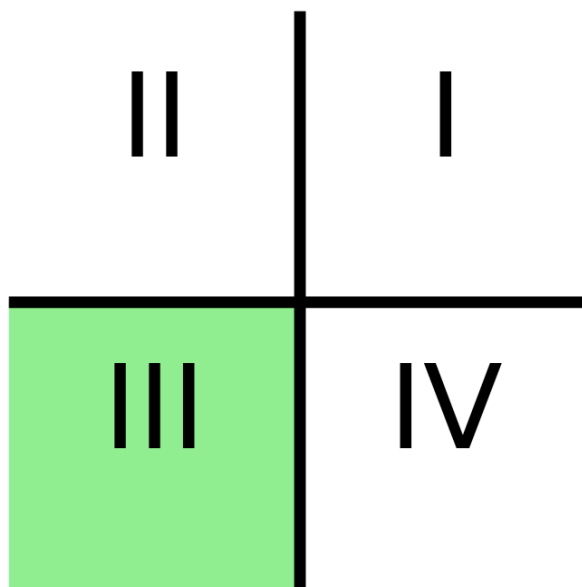
$\cos(\gamma) \rightarrow$ negative

$\tan(\gamma) \rightarrow$ negative

A



B





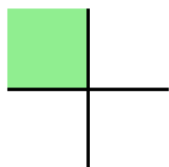
Trigonometric Identities - Intro

26 In which quadrant would these trig ratios have these signs?

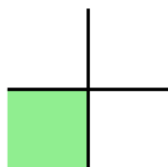
$\cot(\beta) \rightarrow$ positive

$\csc(\beta) \rightarrow$ negative

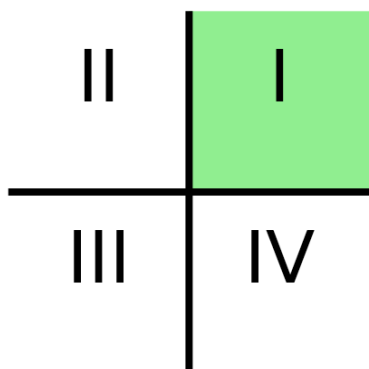
A



B



28 What are the signs on trig ratios in this quadrant?



A

$\cos \rightarrow$ positive
 $\sin \rightarrow$ negative

B

$\cos \rightarrow$ positive
 $\sin \rightarrow$ positive

31 Which angle would have trig ratios with these signs?

$\cos(\theta) \rightarrow$ negative

$\sin(\theta) \rightarrow$ positive

A

$\theta = 210^\circ$

B

$\theta = 120^\circ$

27 Complete the pythagorean trig identity for this expression

$$\sin^2\left(\frac{11\pi}{6}\right)$$

A

$$= 1 - \cos^2\left(\frac{11\pi}{6}\right)$$

B

$$= \cos^2\left(\frac{11\pi}{6}\right) + 1$$

29 Is this pythagorean trig identity correct?

$$\sin^2\left(\frac{4\pi}{3}\right) = 1 - \cos^2\left(\frac{4\pi}{3}\right)$$

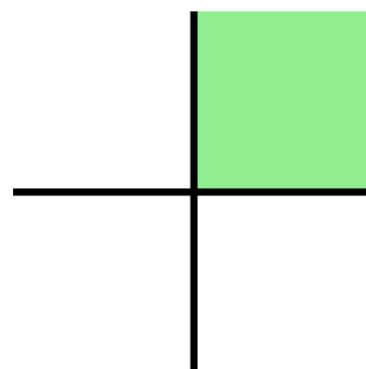
A

Yes

B

No

30 What are the signs on trig ratios in this quadrant?



A

$\cot \rightarrow$ positive
 $\csc \rightarrow$ negative

B

$\cot \rightarrow$ positive
 $\csc \rightarrow$ positive



Trigonometric Identities - Intro

32 Which angle would have trig ratios with these signs?

$$\tan(\theta) \rightarrow \text{negative}$$

$$\cos(\theta) \rightarrow \text{positive}$$

A

$$\theta = 315^\circ$$

B

$$\theta = 135^\circ$$

33 Which angle would have trig ratios with these signs?

$$\tan(\gamma) \rightarrow \text{negative}$$

$$\sin(\gamma) \rightarrow \text{negative}$$

A

$$\gamma = \frac{7\pi}{4} \text{ rad}$$

B

$$\gamma = \frac{5\pi}{6} \text{ rad}$$

34 Which trig ratios and signs would be correct for this angle?

$$135^\circ$$

A

$$\begin{aligned} \sin &\rightarrow \text{positive} \\ \cos &\rightarrow \text{positive} \end{aligned}$$

B

$$\begin{aligned} \sin &\rightarrow \text{positive} \\ \cos &\rightarrow \text{negative} \end{aligned}$$

35 Which trig ratios and signs would be correct for this angle?

$$60^\circ$$

A

$$\begin{aligned} \sec &\rightarrow \text{negative} \\ \sin &\rightarrow \text{positive} \end{aligned}$$

B

$$\begin{aligned} \sec &\rightarrow \text{positive} \\ \sin &\rightarrow \text{positive} \end{aligned}$$

36 Which angle would have trig ratios with these signs?

$$\cot(\beta) \rightarrow \text{positive}$$

$$\sin(\beta) \rightarrow \text{negative}$$

A

$$\beta = \frac{7\pi}{6} \text{ rad}$$

B

$$\beta = \frac{5\pi}{6} \text{ rad}$$

37 Which trig ratios and signs would be correct for this angle?

$$\frac{7\pi}{4} \text{ rad}$$

A

$$\begin{aligned} \sin &\rightarrow \text{negative} \\ \cos &\rightarrow \text{positive} \end{aligned}$$

B

$$\begin{aligned} \sin &\rightarrow \text{positive} \\ \cos &\rightarrow \text{positive} \end{aligned}$$



Trigonometric Identities - Intro

38 Which trig ratios and signs would be correct for this angle?

$$\frac{7\pi}{6} \text{ rad}$$

A

csc $\rightarrow$ negative
cos $\rightarrow$ positive

B

csc $\rightarrow$ negative
cos $\rightarrow$ negative

39 In which quadrant would these trig ratios have these signs?

cos(θ) $\rightarrow$ positive

tan(θ) $\rightarrow$ positive

A

II

B

I

C

IV

D

III

40 In which quadrant would these trig ratios have these signs?

tan(α) $\rightarrow$ negative

cos(α) $\rightarrow$ negative

A

II

B

III

C

I

D

IV

41 What are the signs on trig ratios in this quadrant?

II

A

tan $\rightarrow$ positive
cos $\rightarrow$ negative

B

tan $\rightarrow$ negative
cos $\rightarrow$ negative

42 What are the signs on trig ratios in this quadrant?

I

A

cos $\rightarrow$ positive
tan $\rightarrow$ positive

B

cos $\rightarrow$ negative
tan $\rightarrow$ positive



Trigonometric Identities - Intro

43 Select the reciprocal of this trigonometry ratio
 $\cot$

A

$$\frac{1}{\tan}$$

B

$$\frac{1}{\csc}$$

44 Select the trigonometry ratio for this reciprocal
 $\frac{1}{\sec}$

A

$$\cos$$

B

$$\csc$$

45 Complete the pythagorean trig identity for this expression

$$\tan^2(\alpha)$$

A

$$= \frac{\cos^2(\alpha)}{\sin^2(\alpha)}$$

B

$$= \frac{\sin^2(\alpha)}{\cos^2(\alpha)}$$

46 Is this pythagorean trig identity correct?

$$\tan^2(\beta) = \frac{\cos^2(\beta)}{\sin^2(\beta)}$$

A

No

B

Yes

47 Complete the pythagorean trig identity for this expression

$$\cos^2(315^\circ)$$

A

$$= \frac{\tan^2(315^\circ)}{\sin^2(315^\circ)}$$

B

$$= \frac{\sin^2(315^\circ)}{\tan^2(315^\circ)}$$

48 Is this pythagorean trig identity correct?

$$\cos^2(150^\circ) = \frac{\tan^2(150^\circ)}{\sin^2(150^\circ)}$$

A

No

B

Yes

49 Is this pythagorean trig identity correct?
 $\tan^2\left(\frac{\pi}{4}\right) = \sin^2\left(\frac{\pi}{4}\right) - \cos^2\left(\frac{\pi}{4}\right)$

A

No

B

Yes

50 Complete the pythagorean trig identity for this expression

$$\sec^2(\beta)$$

A

$$= \tan^2(\beta) + 1$$

B

$$= \tan^2(\beta) - 1$$



Trigonometric Identities - Intro

- 51** Complete the pythagorean trig identity for this expression

$$\cos^2\left(\frac{\pi}{3}\right)$$

A

$$= \frac{\sin^2\left(\frac{\pi}{3}\right)}{\tan^2\left(\frac{\pi}{3}\right)}$$

B

$$= \sin^2\left(\frac{\pi}{3}\right) \cdot \tan^2\left(\frac{\pi}{3}\right)$$

- 52** Is this pythagorean trig identity correct?

$$\sec^2(\beta) = \tan^2(\beta) + 1$$

A

No

B

Yes

- 53** Complete the pythagorean trig identity for this expression

$$\tan^2(210^\circ)$$

A

$$= \csc^2(210^\circ) - 1$$

B

$$= \sec^2(210^\circ) - 1$$

- 54** Is this pythagorean trig identity correct?

$$\sec^2(210^\circ) = \tan^2(210^\circ) + 1$$

A

No

B

Yes

- 55** Complete the pythagorean trig identity for this expression

$$\tan^2\left(\frac{\pi}{4}\right)$$

A

$$= \sec^2\left(\frac{\pi}{4}\right) - 1$$

B

$$= 1 - \sec^2\left(\frac{\pi}{4}\right)$$

- 56** Is this pythagorean trig identity correct?

$$\tan^2\left(\frac{7\pi}{6}\right) = 1 - \sec^2\left(\frac{7\pi}{6}\right)$$

A

No

B

Yes

- 57** Complete the pythagorean trig identity for this expression

$$\csc^2(\gamma)$$

A

$$= \cot^2(\gamma) + 1$$

B

$$= \tan^2(\gamma) - 1$$



Trigonometric Identities - Intro

58 Is this pythagorean trig identity correct?

$$\cot^2(\gamma) = \sec^2(\gamma) + 1$$

A

Yes

B

No

59 Complete the pythagorean trig identity for this expression

$$\cot^2(210^\circ)$$

A

$$= \csc^2(210^\circ) - 1$$

B

$$= \sec^2(210^\circ) + 1$$

60 Is this pythagorean trig identity correct?

$$\csc^2(45^\circ) = \tan^2(45^\circ) - 1$$

A

Yes

B

No

61 Complete the pythagorean trig identity for this expression

$$\cot^2\left(\frac{\pi}{3}\right)$$

A

$$= 1 - \csc^2\left(\frac{\pi}{3}\right)$$

B

$$= \csc^2\left(\frac{\pi}{3}\right) - 1$$

62 Is this pythagorean trig identity correct?

$$\csc^2\left(\frac{2\pi}{3}\right) = \tan^2\left(\frac{2\pi}{3}\right) - 1$$

A

Yes

B

No

63 Complete the double-angle identity for this expression

$$\sin(2 \cdot \gamma)$$

A

$$= \frac{\sin(\gamma)\cos(\gamma)}{2}$$

B

$$= 2\sin(\gamma)\cos(\gamma)$$

64 Is this double-angle identity correct?

$$\tan(2 \cdot \theta) = \frac{\sin(\theta)\cos(\theta)}{2}$$

A

No

B

Yes

65 Complete the double-angle identity for this expression

$$\tan(2 \cdot 300^\circ)$$

A

$$= \frac{2\tan(300^\circ)}{1 - \tan^2(300^\circ)}$$

B

$$= 2\tan(300^\circ)\cot(300^\circ)$$



Trigonometric Identities - Intro

66 Is this double-angle identity correct?

$$\sin(2 \cdot 315^\circ) = \frac{\sin(315^\circ)\cos(315^\circ)}{2}$$

A

No

B

Yes

67 Complete the double-angle identity for this expression

$$\cos\left(2 \cdot \frac{\pi}{3}\right)$$

A

$$= \cos^2\left(\frac{\pi}{3}\right) + \sin^2\left(\frac{\pi}{3}\right)$$

B

$$= \cos^2\left(\frac{\pi}{3}\right) - \sin^2\left(\frac{\pi}{3}\right)$$

68 Is this double-angle identity correct?

$$\cos\left(2 \cdot \frac{7\pi}{4}\right) = 1 + 2\sin^2\left(\frac{7\pi}{4}\right)$$

A

Yes

B

No

69 Is this half-angle identity correct?

$$\sin\left(\frac{\alpha}{2}\right) = \pm \sqrt{\frac{1 + \cos(\alpha)}{1 - \cos(\alpha)}}$$

A

Yes

B

No

70 Complete the half-angle identity for this expression

$$\sin\left(\frac{\gamma}{2}\right)$$

A

$$= \pm \sqrt{\frac{1 - \cos(\gamma)}{2}}$$

B

$$= \pm \sqrt{\frac{1 + \cos(\gamma)}{1 - \cos(\gamma)}}$$

71 Complete the half-angle identity for this expression

$$\tan\left(\frac{120^\circ}{2}\right)$$

A

$$= \frac{1 + \cos(120^\circ)}{\csc(120^\circ)}$$

B

$$= \frac{1 - \cos(120^\circ)}{\sin(120^\circ)}$$

72 Is this half-angle identity correct?

$$\cos\left(\frac{330^\circ}{2}\right) = \pm \sqrt{\frac{1 + \cos(330^\circ)}{2}}$$

A

Yes

B

No



Trigonometric Identities - Intro

73 Complete the half-angle identity for this expression

$$\cos\left(\frac{\pi}{4}\right)$$

A

$$= \pm \sqrt{\frac{1 + \cos\left(\frac{\pi}{4}\right)}{2}}$$

B

$$= \pm \sqrt{\frac{1 + \cos\left(\frac{\pi}{4}\right)}{1 - \cos\left(\frac{\pi}{4}\right)}}$$

74 Is this half-angle identity correct?

$$\cos\left(\frac{\pi}{2}\right) = \pm \sqrt{\frac{1 + \sin\left(\frac{\pi}{3}\right)}{2}}$$

A

Yes

B

No

75 Complete the cofunction identity for this expression

$$\sin(\alpha)$$

A

$$= \csc(90^\circ - \alpha)$$

B

$$= \cos(90^\circ - \alpha)$$

76 Is this cofunction identity correct?

$$\cot(\alpha) = \tan(90^\circ - \alpha)$$

A

Yes

B

No

77 Complete the cofunction identity for this expression

$$\csc(210^\circ)$$

A

$$= \sec(90^\circ - 210^\circ)$$

B

$$= \sin(90^\circ - 210^\circ)$$

78 Is this cofunction identity correct?

$$\cot(60^\circ) = \tan(90^\circ + 60^\circ)$$

A

Yes

B

No

79 Is this cofunction identity correct?

$$\csc\left(\frac{\pi}{4}\right) = \sin\left(\frac{\pi}{2} - \frac{\pi}{4}\right)$$

A

No

B

Yes