

## 6.2: (Trigonometric Functions of Real Numbers)

<p>If <math>\cos \alpha = \frac{12}{13}</math> and <math>\frac{3\pi}{2} &lt; \alpha &lt; 2\pi</math> then <math>\frac{\sec \alpha - \tan \alpha}{\sin \alpha} =</math></p> <p>(A) <math>-\frac{39}{10}</math></p> <p>B) <math>\frac{28}{15}</math></p> <p>C) <math>-\frac{18}{5}</math></p> <p>D) <math>-\frac{8}{5}</math></p> <p>E) <math>\frac{29}{5}</math></p>	<p>Trigonometry of real numbers.</p>
<p>If <math>\theta = 12\text{rad}</math>, then <math>\csc \theta =</math></p> <p>A) <math>-\csc(4\pi - 12)</math></p> <p>B) <math>\csc\left(\frac{\pi}{2} - 12\right)</math></p> <p>C) <math>\csc\left(12 - \frac{\pi}{2}\right)</math></p> <p>D) <math>\csc\left(12 - \frac{7\pi}{3}\right)</math></p> <p>E) <math>\csc(4\pi - 12)</math></p>	<p>Trigonometry of real numbers.</p>

If  $\tan \theta = -\frac{5}{3}$  and  $\theta$  is in the second quadrant, then  $\frac{\csc \theta - \cot \theta}{\cos \theta} =$

(A)  $-\frac{34+3\sqrt{34}}{15}$

B)  $\frac{3+\sqrt{34}}{15}$

C)  $-\frac{\sqrt{34}}{15}$

D)  $\frac{3\sqrt{34}-34}{34}$

E)  $\frac{34}{9} - \frac{\sqrt{34}}{5}$

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$\tan\left(-\frac{7\pi}{4}\right) - \sin^2(-135^\circ) =$

(A)  $\frac{1}{2}$

B)  $\frac{8}{3}$

C)  $2 + \sqrt{3}$

D)  $-\frac{8}{3}$

E)  $-\frac{3}{2}$

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$\tan(-150^\circ) + \csc\left(\frac{5\pi}{3}\right) =$ <p>A) <math>-\frac{\sqrt{3}}{3}</math></p> <p>B) <math>\frac{\sqrt{3}}{3}</math></p> <p>C) <math>\frac{2\sqrt{3}}{3}</math></p> <p>D) <math>2\sqrt{3}</math></p> <p>E) <math>-3\sqrt{3}</math></p>	<p>Trigonometry of real numbers.</p>
$\sin\left(\frac{2\pi}{3}\right) \cos\left(\frac{5\pi}{6}\right) + \tan\left(\frac{11\pi}{4}\right) =$ <p>A) <math>-\frac{7}{4}</math></p> <p>B) <math>\frac{1}{4}</math></p> <p>C) <math>-\frac{1}{4}</math></p> <p>D) <math>\frac{5}{4}</math></p> <p>E) <math>-\frac{5}{4}</math></p>	<p>Trigonometry of real numbers.</p>
<p>The exact value of <math>12\csc\left(\frac{35\pi}{3}\right) + \tan\left(-\frac{2\pi}{3}\right)</math> is equal to</p> <p>A) <math>-7\sqrt{3}</math></p> <p>B) <math>\frac{10\sqrt{3}}{3}</math></p> <p>C) <math>-3\sqrt{3}</math></p> <p>D) <math>4\sqrt{3}</math></p> <p>E) <math>-5\sqrt{3}</math></p>	<p>Trigonometry of real numbers.</p>

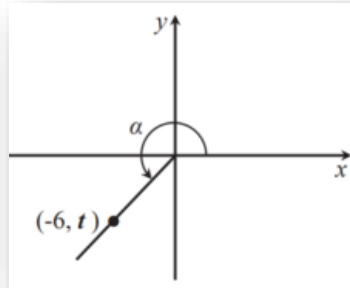
<p>Which ONE of the following statements is IMPOSSIBLE?</p> <p>A) <math>\cot^2 \theta - \csc^2 \theta = 1</math></p> <p>B) <math>\tan \theta = \frac{22}{7}</math></p> <p>C) <math>\cot \theta = -100</math></p> <p>D) <math>\cos \theta = -\frac{4}{7}</math> and <math>\sec \theta = -\frac{7}{4}</math></p> <p>E) <math>\sin \theta = \frac{1}{5}</math> and <math>\csc \theta = 5</math></p>	<p>Trigonometry of real numbers.</p>
<p>If <math>f(x) = \frac{x^2 \sin x}{\sec^3 x}</math> and <math>g(x) = \cot x</math>, then</p> <p>A) <math>f</math> is an odd function and <math>g</math> is an odd function</p> <p>B) <math>f</math> is an even function and <math>g</math> is an even function</p> <p>C) <math>f</math> is an even function and <math>g</math> is an odd function</p> <p>D) <math>f</math> is an odd function and <math>g</math> is an even function</p> <p>E) <math>f</math> is an even function and <math>g</math> is neither an odd nor an even function</p>	<p>Trigonometry of real numbers.</p>
<p>Which one of the following is FALSE?</p> <p>A) <math>f(x) =  x  \tan(\sin x)</math> is an even function</p> <p>B) <math>f(x) =  x  \cot x - \sin x</math> is an odd function</p> <p>C) <math>f(x) = \csc x \tan x</math> is an even function</p> <p>D) <math>f(x) = x^2 \cos x \sin^3 2x</math> is an odd function</p> <p>E) <math>f(x) = x^3 + \sec x</math> is neither even nor odd function</p>	<p>Trigonometry of real numbers.</p>

<p><math>f(x) = 3 + \cos x</math> and <math>g(x) = x\sin^2 x</math>, then</p> <p>A) <math>f</math> is an even function and <math>g</math> is an odd function.</p> <p>B) <math>f</math> is an even function and <math>g</math> is an even function.</p> <p>C) <math>f</math> is an odd function and <math>g</math> is an odd function.</p> <p>D) <math>f</math> is an odd function and <math>g</math> is an even function.</p> <p>E) both functions <math>f</math> and <math>g</math> are neither odd nor even functions.</p>	<p>Trigonometry of real numbers.</p>
<p>Which one of the following statements is FALSE?</p> <p>A) <math>f(x) = \sin(\cos x)</math> is an odd function</p> <p>B) If <math>\sin \theta &gt; 0</math> and <math>\cos \theta &lt; 0</math>, then <math>\theta</math> is in quadrant II</p> <p>C) <math>\csc \pi</math> is undefined</p> <p>D) <math>\log_5(\cos 0) = 0</math></p> <p>E) <math>f(x) = x\sin x</math> is an even function</p>	<p>Trigonometry of real numbers.</p>
<p><math>\tan\left(\frac{23\pi}{6}\right) + \csc\left(\frac{11\pi}{6}\right) =</math></p> <p>A) <math>\frac{-\sqrt{3}-6}{3}</math></p> <p>B) <math>\frac{-\sqrt{3}+6}{3}</math></p> <p>C) <math>\frac{-2\sqrt{3}-3}{6}</math></p> <p>D) <math>\frac{\sqrt{3}+2}{3}</math></p> <p>E) <math>\frac{\sqrt{3}-2}{3}</math></p>	<p>Trigonometry of real numbers.</p>

<p>The value of <math>\cot\left(-\frac{17\pi}{3}\right) + \sin\left(\frac{11\pi}{6}\right) =</math></p> <p>A) <math>\frac{2\sqrt{3}-3}{6}</math></p> <p>B) <math>\frac{2\sqrt{3}+1}{3}</math></p> <p>C) <math>\frac{\sqrt{3}-3}{3}</math></p> <p>D) <math>\frac{2\sqrt{3}-1}{6}</math></p> <p>E) <math>\frac{\sqrt{3}+2}{2}</math></p>	<p>Trigonometry of real numbers.</p>
<p><math>\sec\left(-\frac{23\pi}{6}\right) \cot\left(\frac{16\pi}{3}\right) =</math></p> <p>A) <math>\frac{2}{3}</math></p> <p>B) <math>-\frac{2}{3}</math></p> <p>C) 2</p> <p>D) <math>-\frac{3}{2}</math></p> <p>E) -3</p>	<p>Trigonometry of real numbers.</p>
<p><math>\sec\left(-\frac{23\pi}{6}\right) + \tan\left(\frac{17\pi}{3}\right) =</math></p> <p>A) <math>\frac{-\sqrt{3}}{3}</math></p> <p>B) <math>\frac{\sqrt{3}}{3}</math></p> <p>C) <math>-\sqrt{3}</math></p> <p>D) <math>\sqrt{3}</math></p> <p>E) <math>\frac{5\sqrt{3}}{3}</math></p>	<p>Trigonometry of real numbers.</p>

In the figure below, if  $\sin \alpha = -\frac{4}{5}$ , then the value of  $t$  is

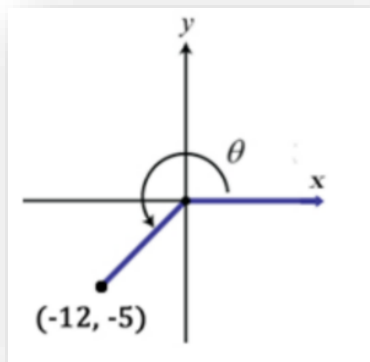
- A) -8
- B) -6
- C) -4
- D) -3
- E) -2



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For the angle  $\theta$  shown in the adjacent diagram,  $\csc \theta + \cot \theta$  is equal to

- A)  $-\frac{1}{5}$
- B) -5
- C)  $-\frac{13}{5}$
- D)  $-\frac{3}{20}$
- E) -3



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Which one of the following statements is FALSE?

- (a) If  $\tan \theta = \frac{2}{3}$ , then  $\sin \theta = 2$  and  $\cos \theta = 3$
- (b)  $f(x) = x \sin^2 x$  is an odd function
- (c)  $f(x) = \tan(\cos x)$  is an even function
- (d)  $f(x) = \log(\sin x)$  is neither even nor odd function
- (e)  $\tan^2 x - \sec^2 x = -1$

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