

Math 112

Exam 2 (3) $\frac{1}{x} + \frac{1}{x^2} = 3$

\uparrow
typo

out of 100

Q's

10.2
#6

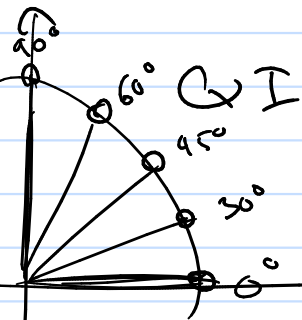
If $\theta = \frac{7\pi}{3}$ (θ is measured in radians), then

$\sin(\theta)$ equals

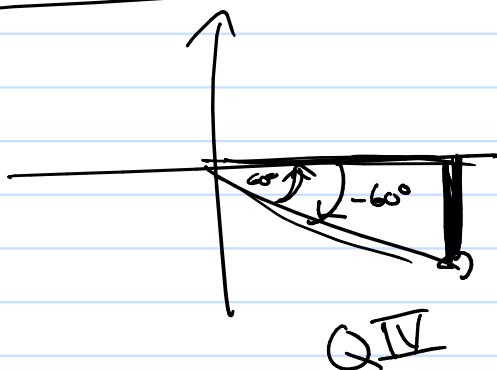
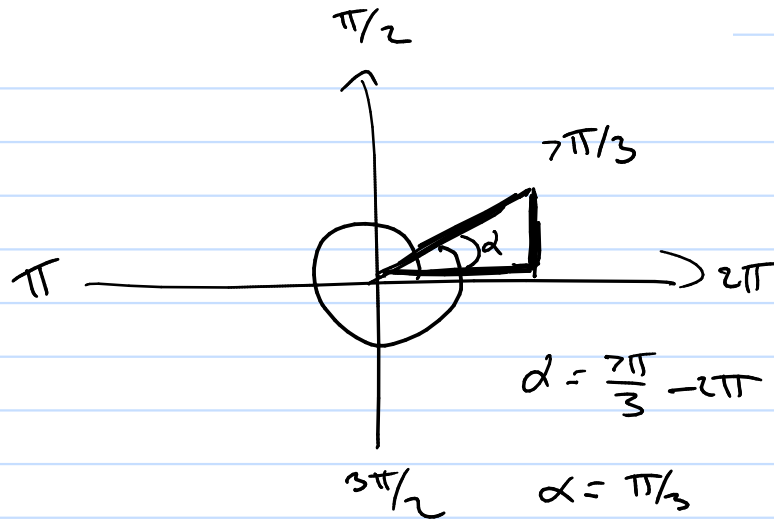
$$\frac{7}{3} = 2 + \frac{1}{3}$$

$\cos(\theta)$ equals

Note: Your answer can be an expression involving the square root function, which can be entered as `sqrt()`.



angle		$\cos \theta$	$\sin \theta$
0°	0	1	0
30°	$\pi/6$	$\sqrt{3}/2$	$1/2$
45°	$\pi/4$	$\sqrt{2}/2$	$\sqrt{2}/2$
60°	$\pi/3$	$1/2$	$\sqrt{3}/2$
90°	$\pi/2$	0	1



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

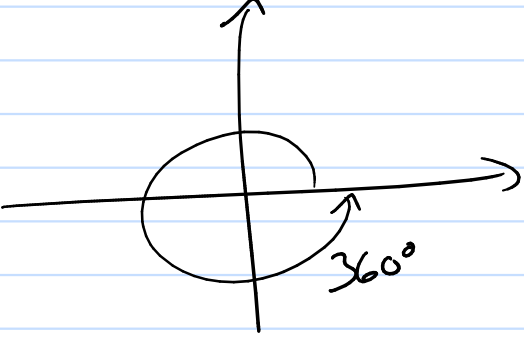
$$\sin(-60^\circ) = -\sin(60^\circ)$$

8

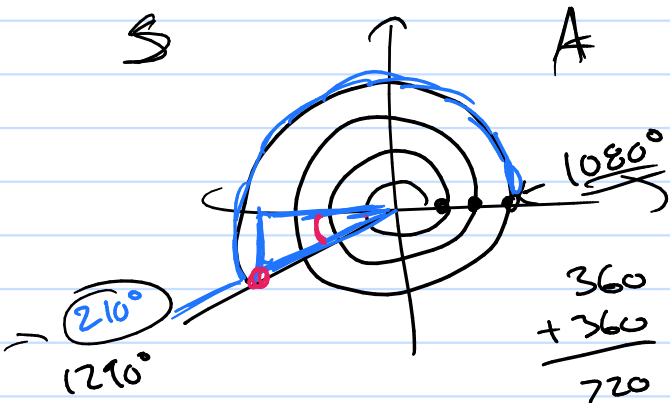
Find the exact value. NO DECIMALS. If the answer involves a square root, enter it as sqrt. E.g. the square root of two should be written sqrt(2).

sin(1290°) = -√2 ;

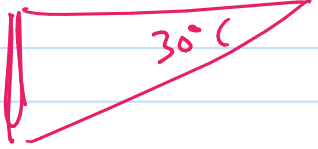
cos(1290°) = - $\frac{\sqrt{13}}{2}$;



$\frac{1290}{360} = 3 \frac{583}{360}$

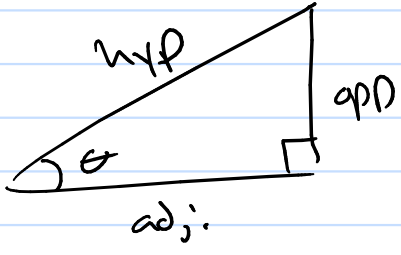


$\alpha = 210^\circ - 180^\circ$
 $\alpha = 30^\circ$



$\frac{360}{+360} = \frac{720}{720}$
 $\frac{720}{1080}$

$\frac{1290}{1080} = \frac{210}{210}$



$adj^2 + opp^2 = hyp^2$

$\sin(\theta) = \frac{opp}{hyp}$

$\tan(\theta) = \frac{opp}{adj}$

$\csc(\theta) = \frac{hyp}{opp}$

$\cos(\theta) = \frac{adj}{hyp}$

$\cot(\theta) = \frac{adj}{opp}$

$\sec(\theta) = \frac{hyp}{adj}$

$\tan \theta = \frac{\sin \theta}{\cos \theta}$	$\cot \theta = \frac{\cos \theta}{\sin \theta}$	$\csc \theta = \frac{1}{\sin \theta}$	$\sec \theta = \frac{1}{\cos \theta}$
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$\sin^2 \theta + \cos^2 \theta = 1$	$\tan^2 \theta + 1 = \sec^2 \theta$	$\cot^2 \theta + 1 = \csc^2 \theta$
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5. $\tan\left(-\frac{11\pi}{6}\right)$

6. $\sec\left(-\frac{3\pi}{2}\right)$

7. $\csc\left(-\frac{\pi}{3}\right)$

8. $\cot\left(\frac{13\pi}{2}\right)$

9. $\tan(117\pi)$

10. $\sec\left(-\frac{5\pi}{3}\right)$

11. $\csc(3\pi)$

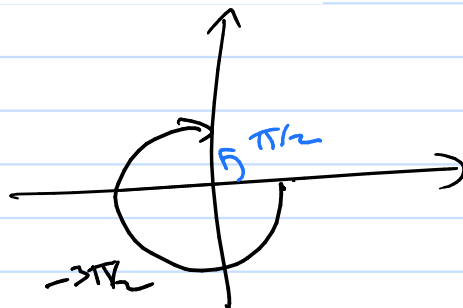
12. $\cot(-5\pi)$

$$\textcircled{\#6} \sec\left(-\frac{3\pi}{2}\right) = \frac{1}{\cos\left(-\frac{3\pi}{2}\right)}$$

$$\sec(\theta) = \frac{1}{\cos(\theta)}$$

$$= \frac{1}{\cos(\pi/2)} = \frac{1}{0} \neq$$

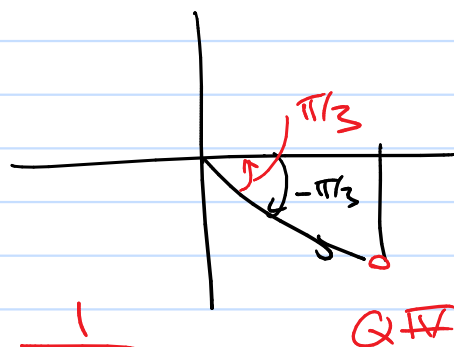
$\sec(-3\pi/2)$ d.v.e.



$$\textcircled{\#7} \csc\left(-\frac{\pi}{3}\right) = \frac{1}{\sin\left(-\frac{\pi}{3}\right)}$$

$$= \frac{1}{-\sin(\pi/3)} = -\frac{1}{\sin(\pi/3)}$$

$$= -\frac{2\sqrt{3}}{\sqrt{3}\sqrt{3}} = \boxed{-\frac{2\sqrt{3}}{3}} = \boxed{-\frac{2}{3}\sqrt{3}}$$



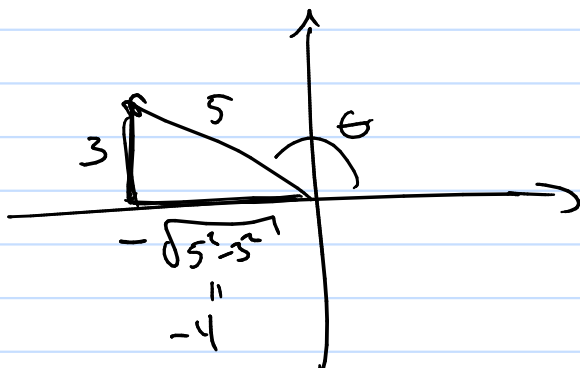
21. $\sin(\theta) = \frac{3}{5}$ with θ in Quadrant II

22. $\tan(\theta) = \frac{12}{5}$ with θ in Quadrant III

23. $\csc(\theta) = \frac{25}{24}$ with θ in Quadrant I

24. $\sec(\theta) = 7$ with θ in Quadrant IV

$\textcircled{\#21}$



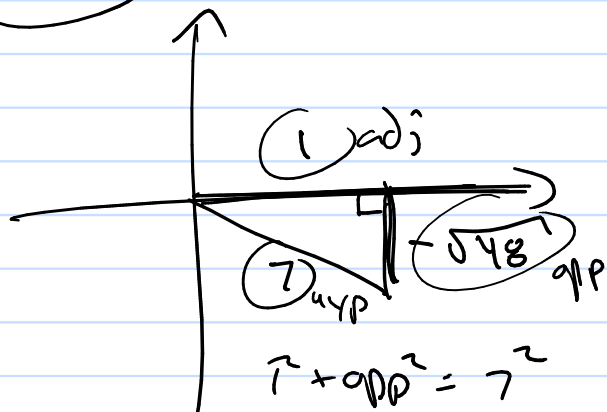
$$\boxed{\sin(\theta) = \frac{3}{5}} \quad \cos(\theta) = -\frac{4}{5}$$

$$\tan(\theta) = -\frac{3}{4} \quad \cot(\theta) = -\frac{4}{3}$$

$$\csc(\theta) = \frac{5}{3} \quad \sec(\theta) = -\frac{5}{4}$$

#24

$$\sec(\theta) = \frac{7}{1} \quad \text{in} \quad \text{Q IV}$$



$$7^2 + opp^2 = 7^2$$

$$opp = \sqrt{48}$$

$$\sin(\theta) = -\frac{\sqrt{48}}{7}$$

$$\cos(\theta) = \frac{1}{7}$$

$$\tan(\theta) = -\sqrt{48}$$

$$\cot(\theta) = -\frac{1}{\sqrt{48}}$$

$$\csc(\theta) = -\frac{7}{\sqrt{48}}$$

$$\sec(\theta) = 7$$

Simplify any identities

88. $\frac{\cos(\theta)}{\sin^2(\theta)} = \underline{\underline{\csc(\theta) \cot(\theta)}}$ ✓

right to left

$$\csc(\theta) \cot(\theta) = \left(\frac{1}{\sin(\theta)} \right) \left(\frac{\cos(\theta)}{\sin(\theta)} \right) = \frac{\cos(\theta)}{\sin^2(\theta)}$$

left to right

$$\frac{\cos(\theta)}{\sin^2(\theta)} = \frac{\cos(\theta)}{\sin(\theta) \sin(\theta)} = \frac{1}{\sin \theta} \cdot \frac{\cos \theta}{\sin \theta} = \csc \theta \cot \theta$$