

Warm Up

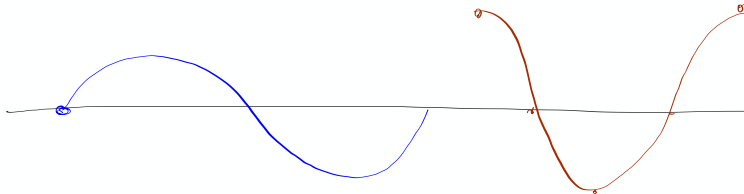
← in your notes

1. Draw & label:

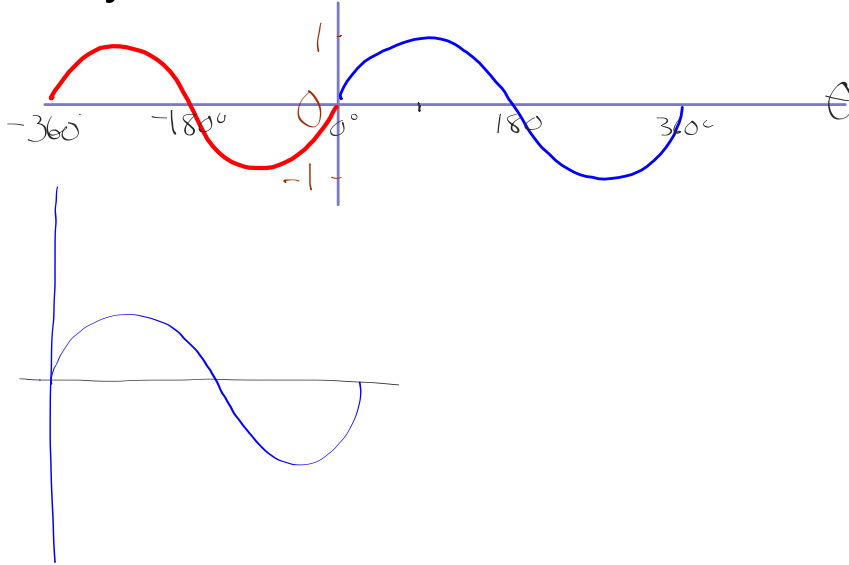
- 2 cycles of the sine function, from -360° to 360° .
- One cycle of the cosine function.

2. Without using your calculator, find an angle whose cosine value is the same as the one produced by the cosine of 120° .

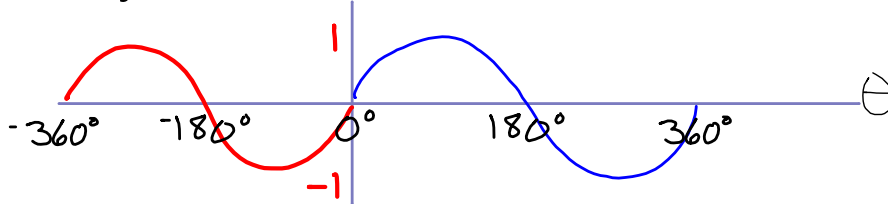
HW Help



2 cycles of the sine function.



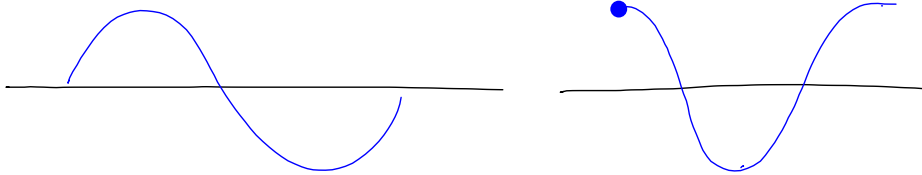
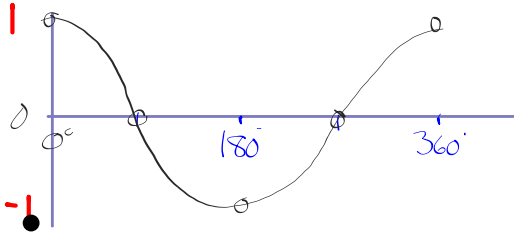
2 cycles of the sine function.



d

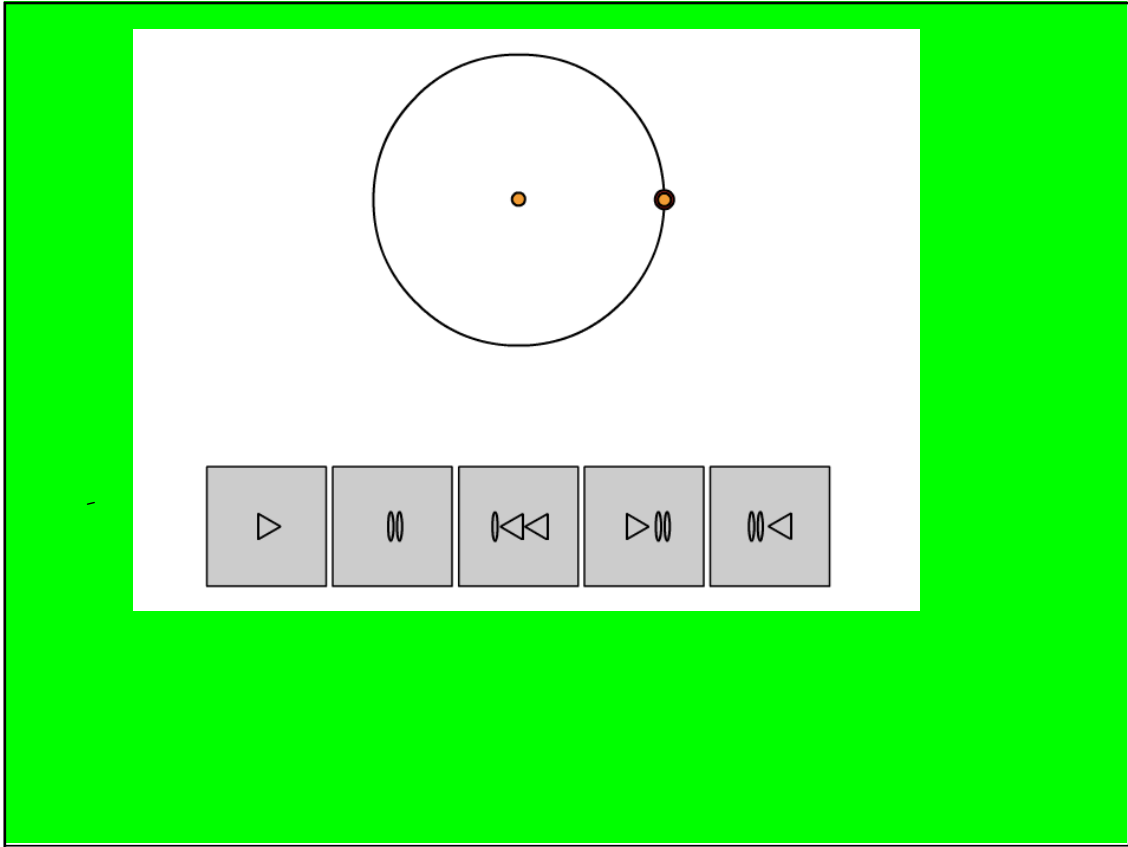
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Draw one cycle of the cosine function.

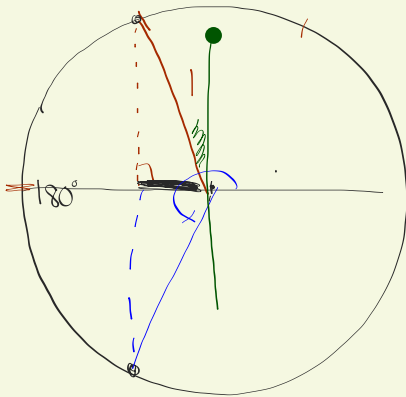


d

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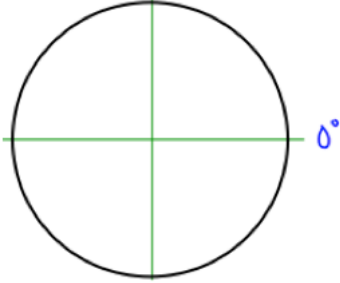
2. Without using your calculator, find an angle whose cosine value is the same as the one produced by the cosine of 120° .



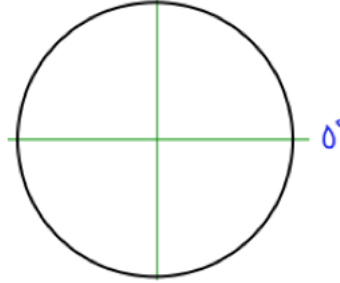
$$180^\circ + 60^\circ = 240^\circ$$

c. A negative cosine and a negative sine.

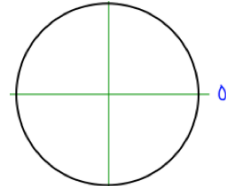
a. A positive cosine and a negative sine.



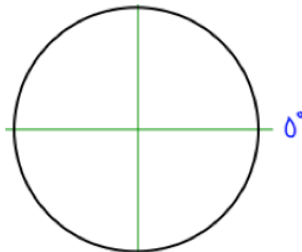
b. A sine of -1 .



c. A negative cosine and a negative sine.



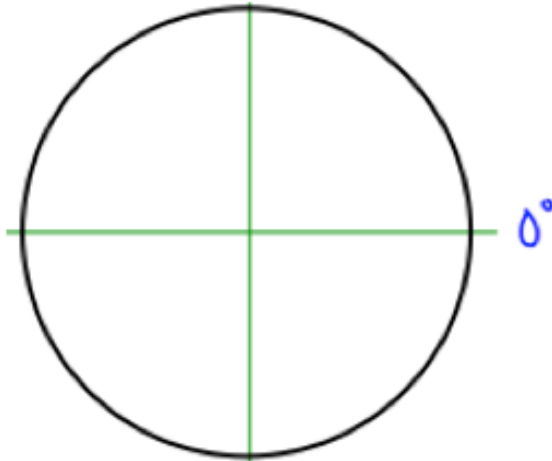
d. A cosine of about -0.9 and a sine of about 0.4 .



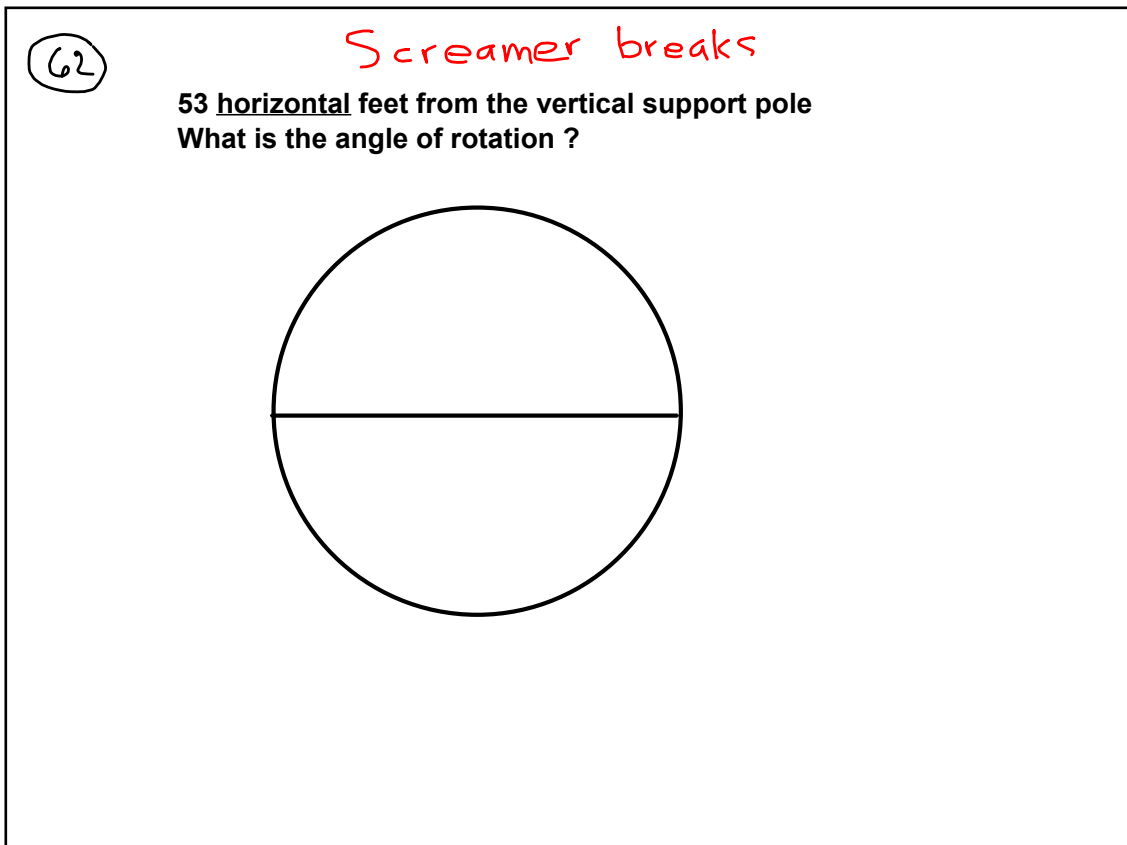
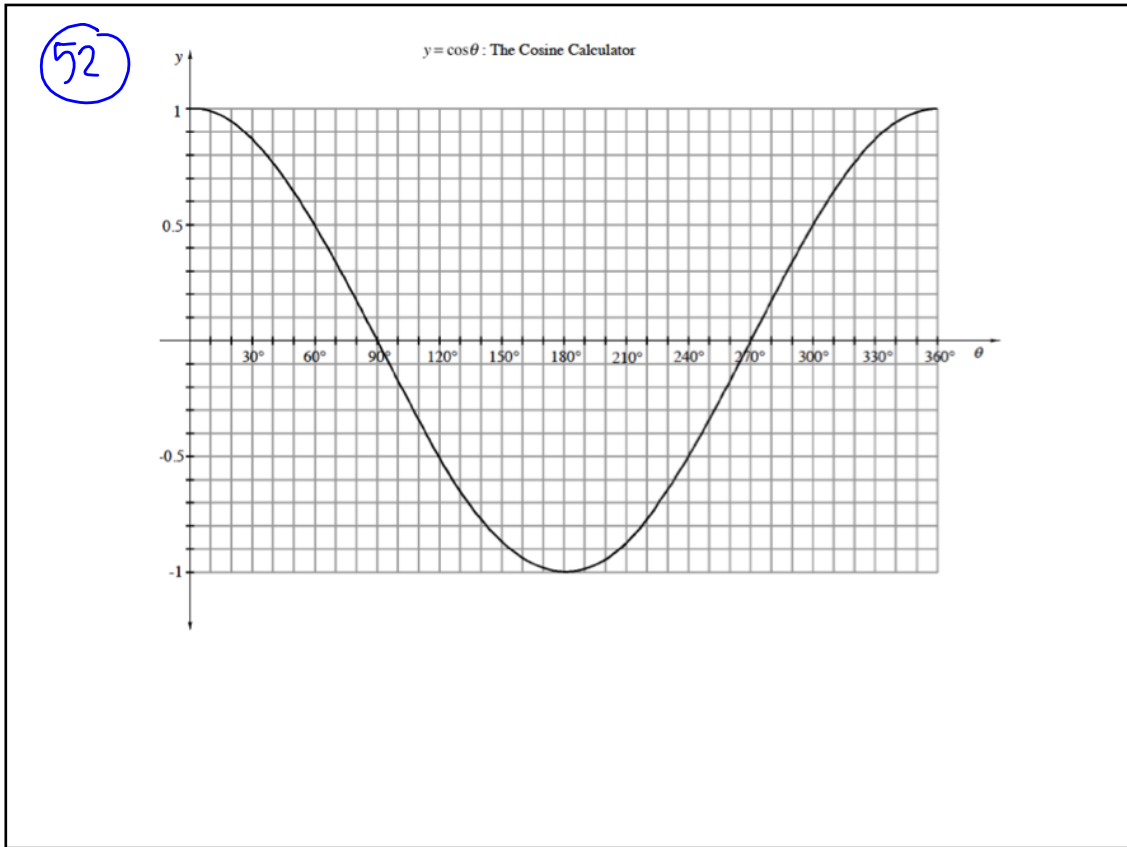
d

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e. Could an angle have a sine equal to 0.9 and cosine equal to 0.8?
why not.



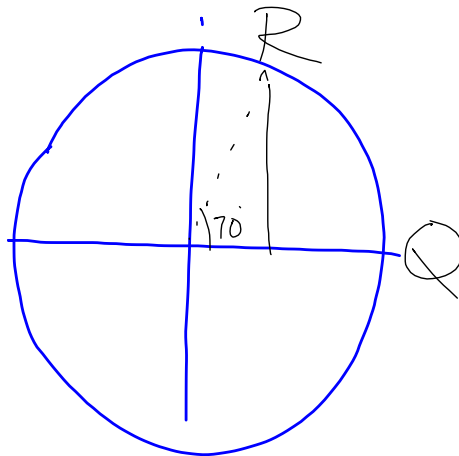
HW Questions



(63)

a) $(-, +)$ b) sine of 1 c) $(-, -)$ d) (\bullet, \bullet) (\bullet, \bullet) possible ?

(64)

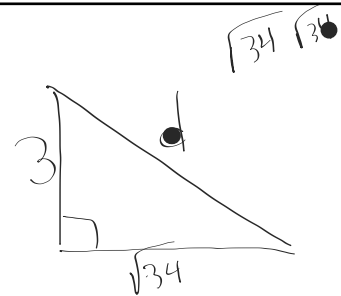
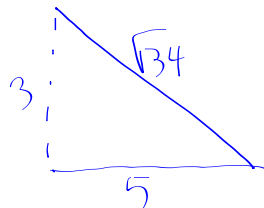
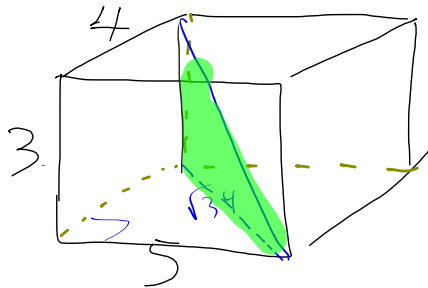


$$.117 + \bullet 883 = 1$$

$$, = 1$$

(68) b) $\frac{3}{x+1} + \frac{4}{x} = 2$

(69)



$$d^2 = (3)^2 + (\sqrt{34})^2$$

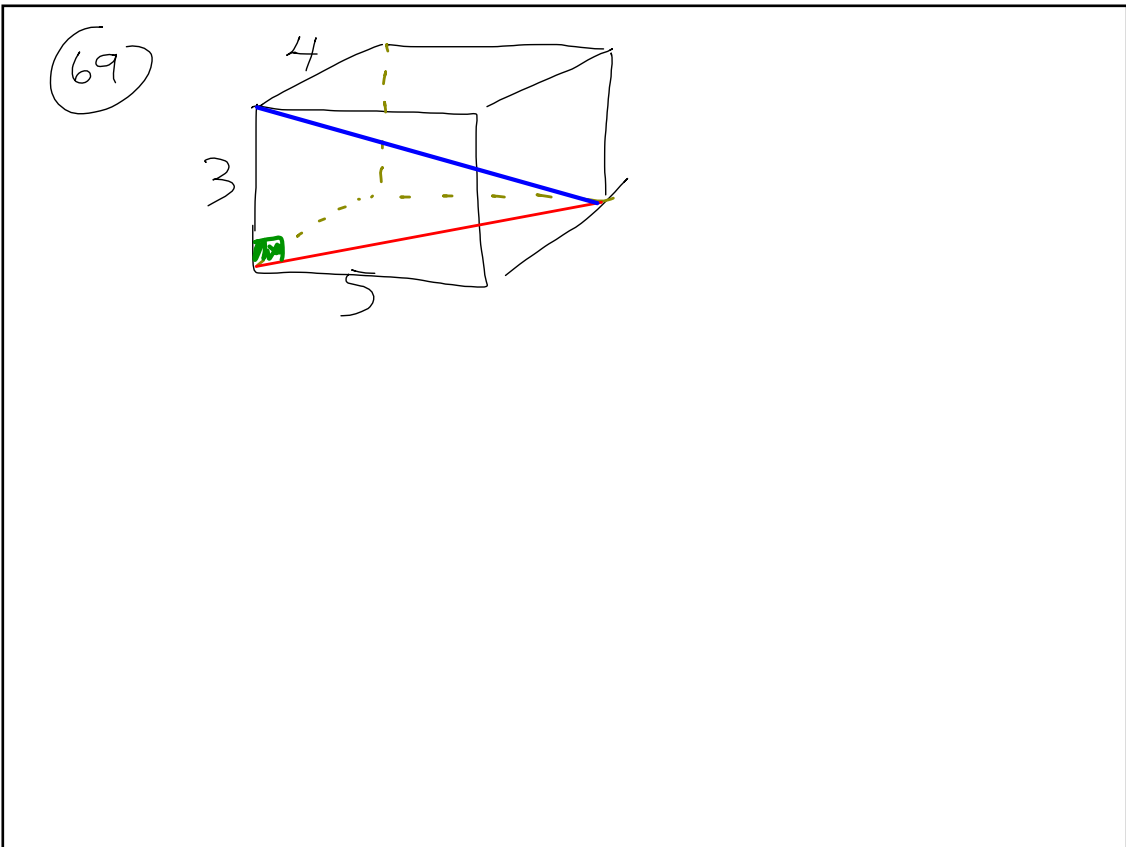
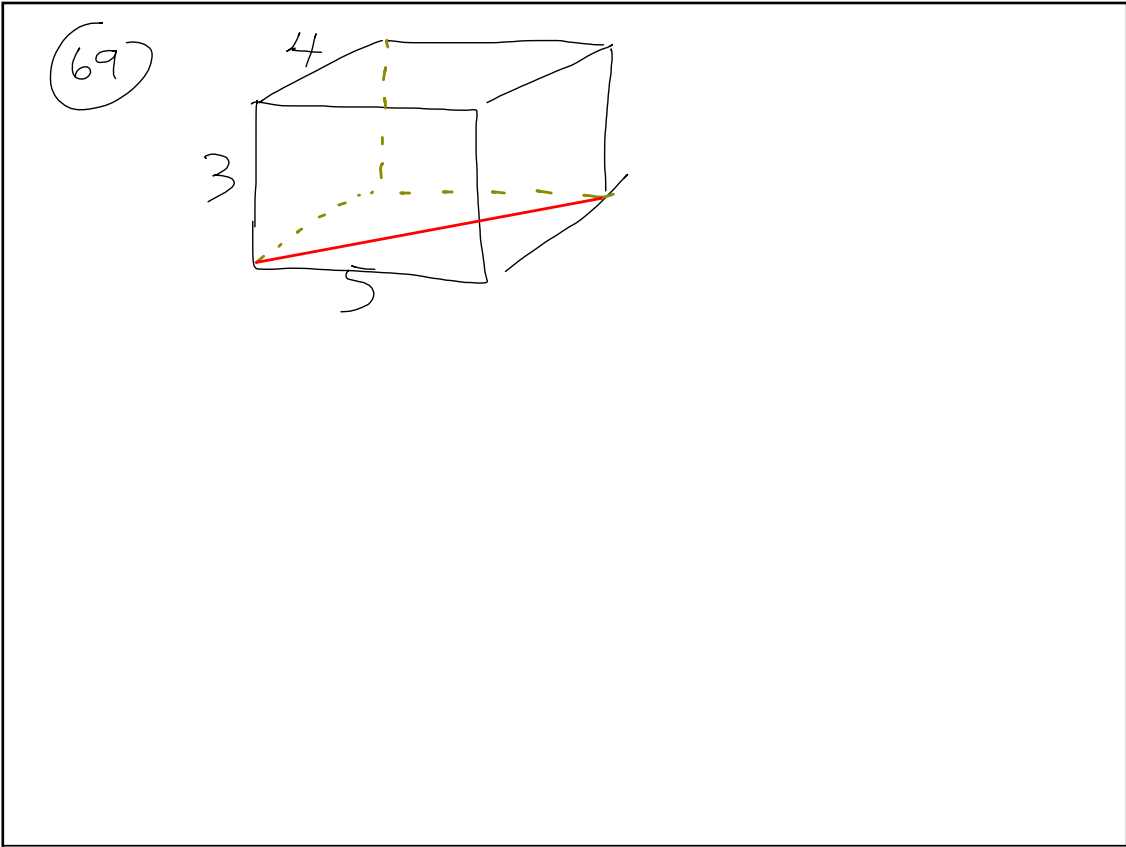
$$d^2 = 9 + 34$$

$$d^2 = 43$$

$$d = \sqrt{43}$$

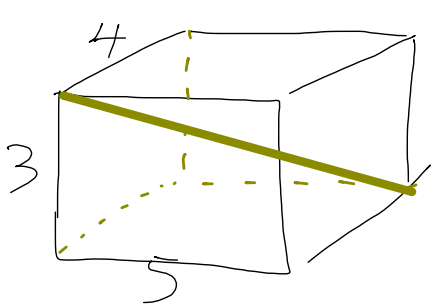
d

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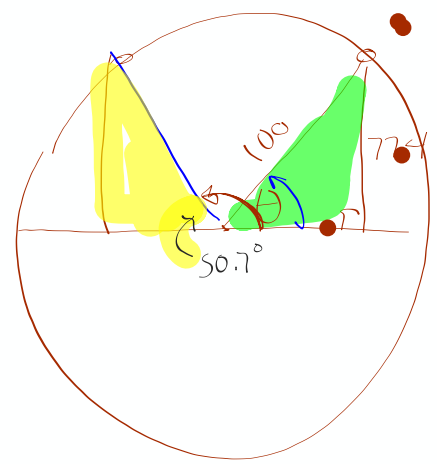


d

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short cut

$$d = \sqrt{3^2 + 4^2 + 5^2}$$


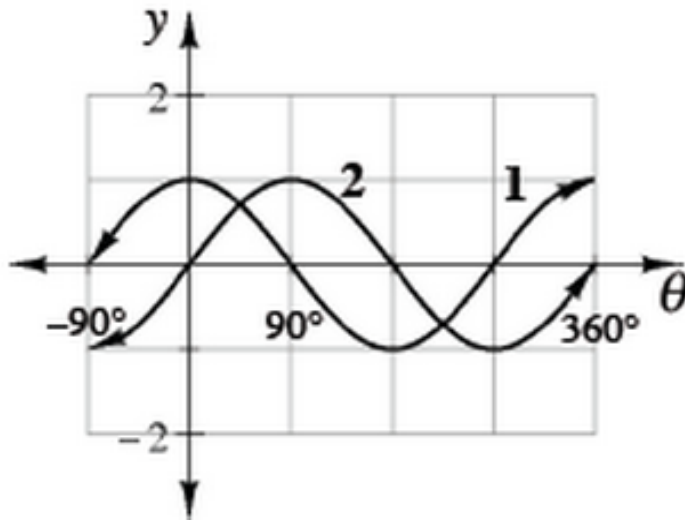
Sin Soh Cah Toa

$$\sin \theta = \frac{77.4}{100}$$
$$\theta = \sin^{-1}\left(\frac{77.4}{100}\right)$$
$$\theta = 50.7^\circ$$

62

7-62. Shinna was riding *The Screamer* when it broke down. Her seat was 53 horizontal feet from the central support pole. What was her seat's angle of rotation? How can you tell?

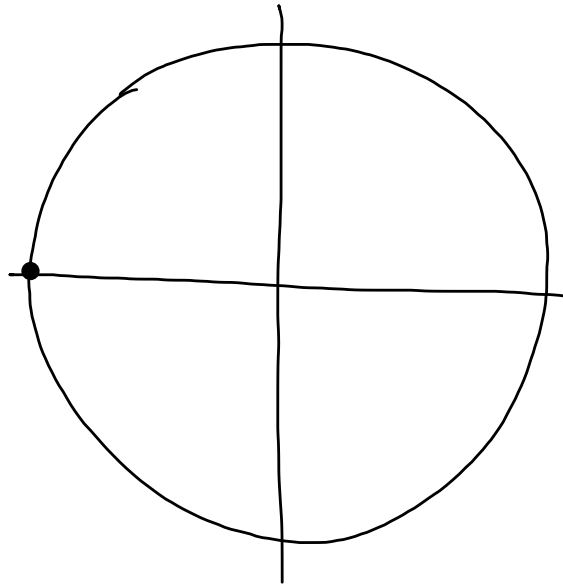
65



66

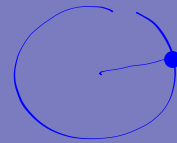
$$y = \cos x$$

$$y = -1$$

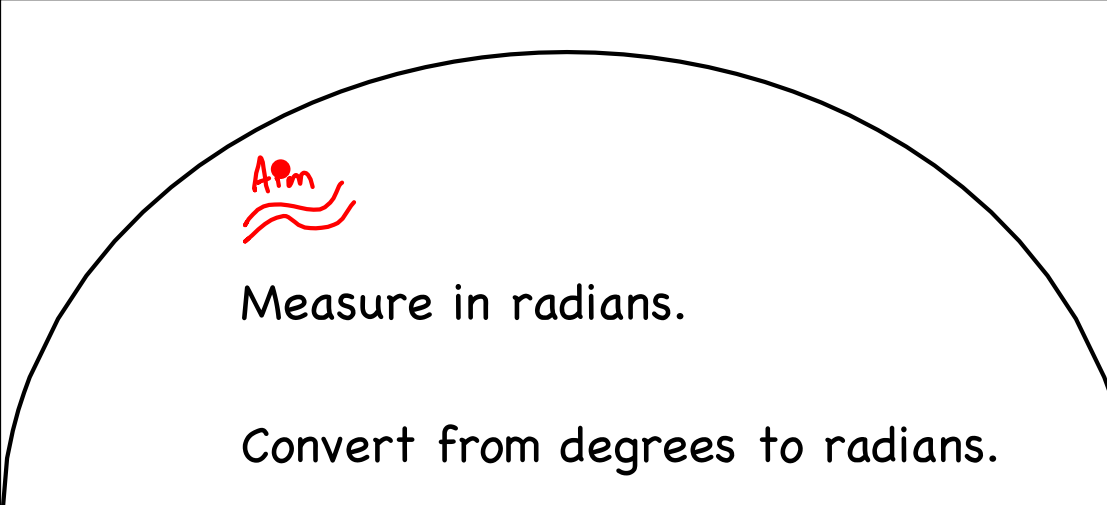


What word are you reminded of when
see the word.....

"Radian"



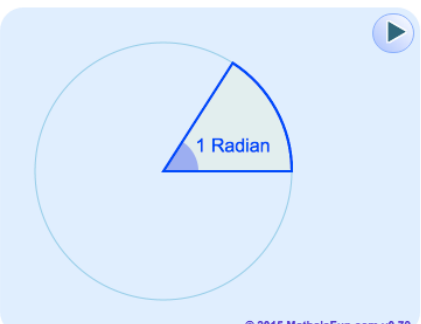
read the first two paragraphs page 332
at the beginning of section 7.1.5



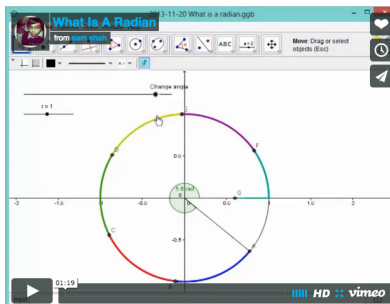
Aim

Measure in radians.

Convert from degrees to radians.



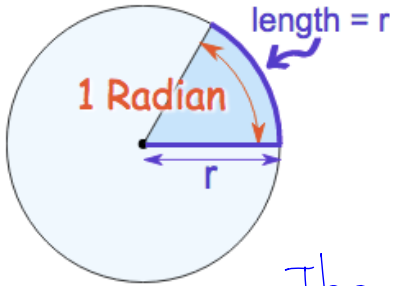
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What Is A Radian

01:19 HD vimeo

Radian Definition (Notes)



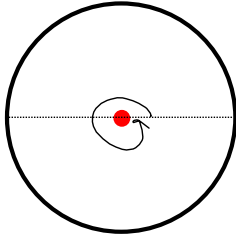
A **radian** is defined as an angular measure such that....

an arc length of one radius on a circle of radius one produces an angle with measure one radian. .

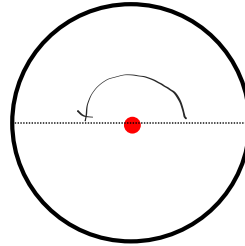
The arc length is equal to the angle

$$C = 2\pi r$$

There are 2π radians
around a circle, exactly.



There are π radians
half way around a circle.



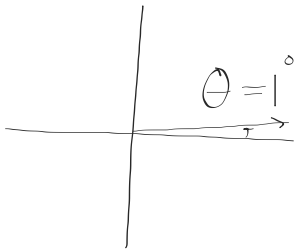
IF you have a 30 degree angle
in a circle, and the circle gets
enlarged
proportionallydoes an
angle change ?

Drawing Radians

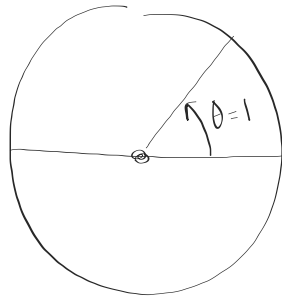
7-75

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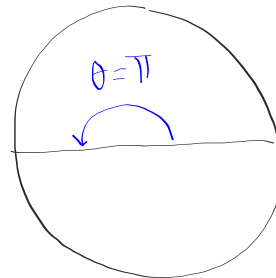
a. 1 degree

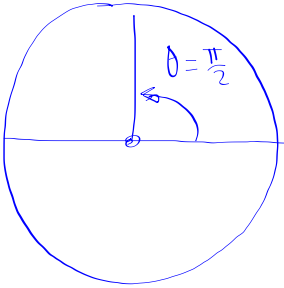
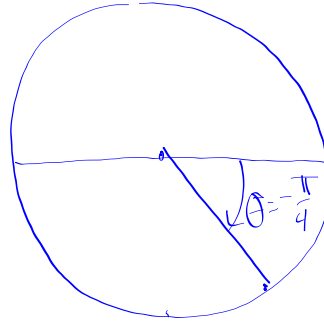
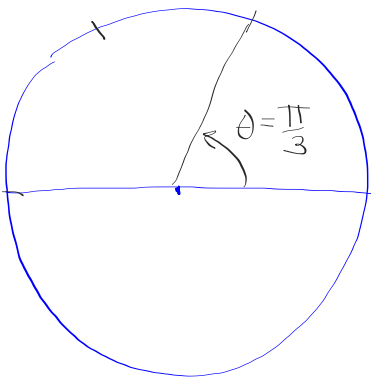
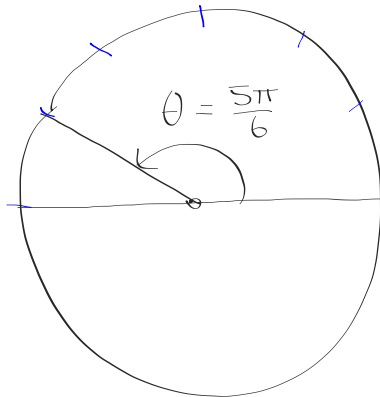


b. 1 radian



c. π radians



d. $\frac{\pi}{2}$ radianse. $-\frac{\pi}{4}$ radiansf. $\frac{\pi}{3}$ radiansg. $\frac{5\pi}{6}$ radians $\frac{5\pi}{6}$

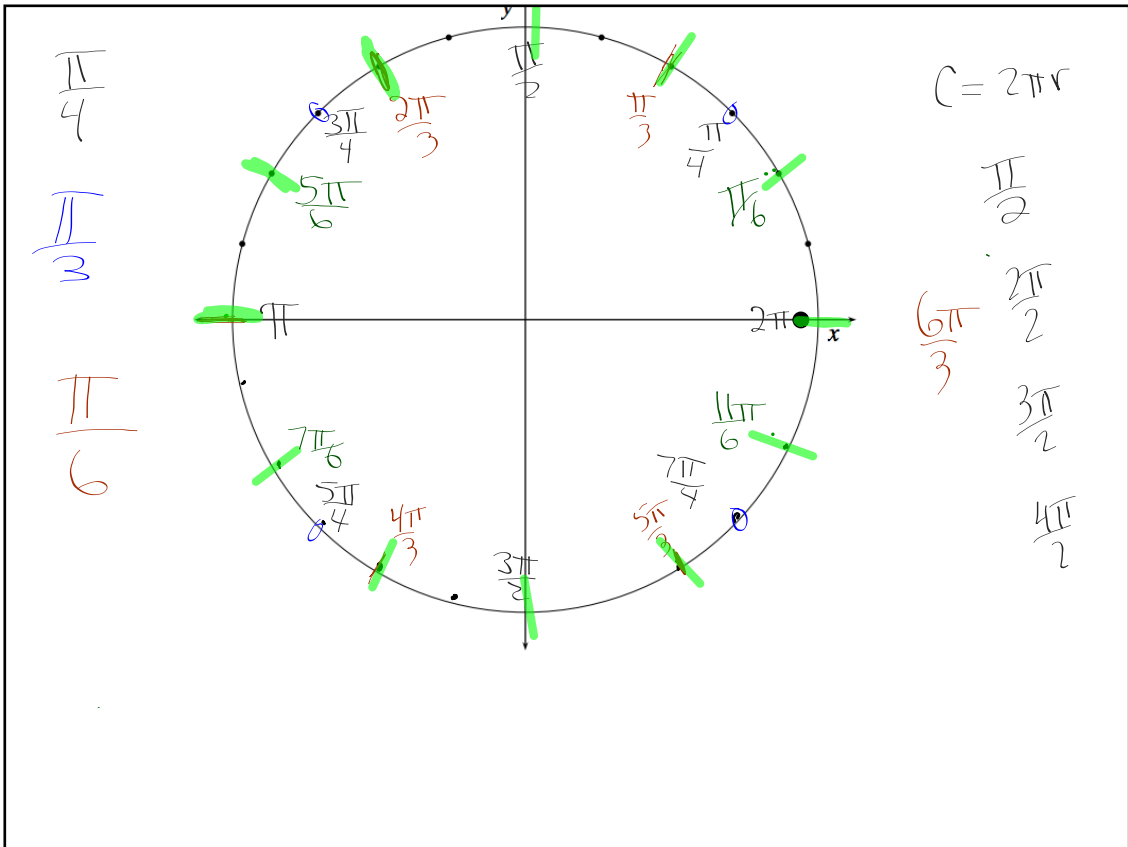
11

d

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$$\theta = \frac{5\pi}{6}$$

$$\theta = -\frac{3\pi}{4}$$



Converting from Degrees to Radians

7-76

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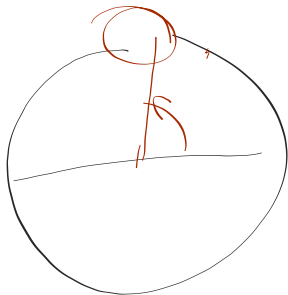
Convert ^{to radians}

75.2°

$$75.2^\circ \times \frac{2\pi}{360^\circ} = 1.31 \text{ radians}$$



$$\frac{360^\circ}{2\pi} \quad \text{or} \quad \frac{2\pi}{360^\circ}$$

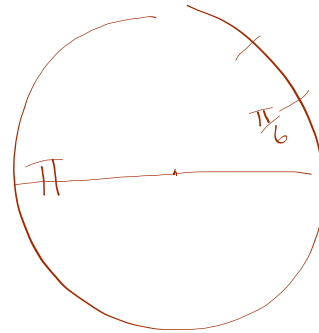


1.31 radians

$$130^\circ \cdot \frac{2\pi}{360^\circ}$$

$$\frac{2\pi}{12}$$

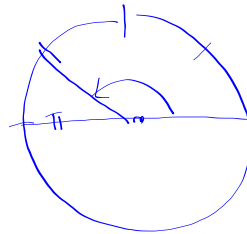
$$\frac{\pi}{6}$$



↓ radians Convert to degrees

$$\frac{3\pi}{4} \cdot \frac{360^\circ}{2\pi}$$

$$135^\circ$$



135°

Unit circle

$$\frac{\pi}{180}$$

dimensional
analysis

$$\frac{2\pi}{360}$$

d

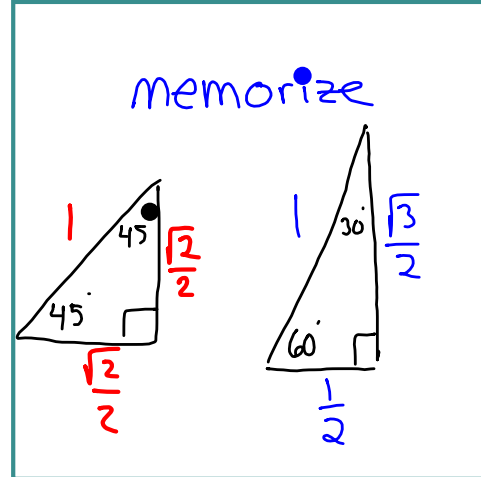
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$$\frac{3\cancel{\pi}}{7} \times \frac{360^\circ}{2\cancel{\pi}}$$

$$77.14^\circ$$

BB

In your notes, write down the following and put a box around it:



Assignment

7 **77-79, 80a, 82a, 83, 85**

on #78 only worry
about the approximate
answers.