

Pre-Calculus Q2 Review

Name Key

1. convert to radians  $\frac{d}{360} = \frac{r}{2\pi}$

150 deg  $\frac{150}{360} = \frac{r}{2\pi} \Rightarrow \frac{5}{6}\pi$     270 deg  $\frac{270}{360} = \frac{r}{2\pi} \Rightarrow \frac{3}{2}\pi$     -30 deg  $\frac{-30}{360} = \frac{r}{2\pi} \Rightarrow -\frac{1}{6}\pi$

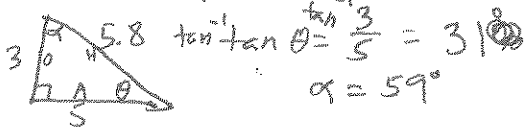
2. convert to degrees

$\pi/2$   $\frac{d}{360} = \frac{\pi/2}{2\pi} \Rightarrow d = \frac{180}{2} = 90$      $5/6 \pi$   $\frac{d}{360} = \frac{5\pi/6}{2\pi} \Rightarrow d = \frac{300\pi}{2\pi} = 150$      $-3/4 \pi$   $\frac{d}{360} = \frac{-3\pi/4}{2\pi} \Rightarrow d = -225$  or  $-135$

\* 3. State the amplitude and period for  $y = 4 \sin(2x)$

per =  $\frac{2\pi}{K}$      $\frac{2\pi}{2} = \pi$     per.

4. solve the triangle with sides 3, 5, and 5.8.



5. Use the unit circle to answer the following:

$\sin 30 = \frac{1}{2}$      $\cos 120 = -\frac{1}{2}$      $\tan 180 = 0$      $\csc 45 = \frac{1}{\sin 45} = \frac{2}{\sqrt{2}} = \sqrt{2}$

6. solve the triangle with  $A = 45$  degrees,  $b = 4$  and  $c = 8$

$a^2 = b^2 + c^2 - 2bc \cos A$   
 $a^2 = 4^2 + 8^2 - 2(4)(8) \cos 45$   
 $a^2 = 34.7$   
 $a = 5.9$

7. solve the RIGHT triangle with  $A = 39$  degrees,  $c = 6$

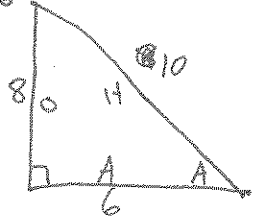


$\sin 39 = \frac{x}{6}$   
 $x = 3.8$   
 $\cos 39 = \frac{y}{6}$   
 $y = 4.7$

$\frac{5.9}{\sin 45} = \frac{4}{\sin B}$   
 $.48 = \sin B$   
 $B = 28.64$

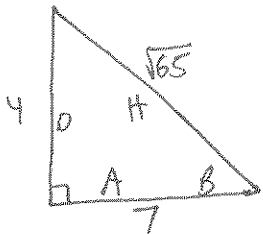
8. State the following for the drawn triangle:

$\sin A = \frac{8}{10}$   
 $\cos A = \frac{6}{10}$   
 $\tan B = \frac{8}{6}$



9. State the following for the drawn triangle:

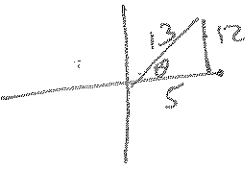
$\sin B = \frac{4\sqrt{65}}{\sqrt{65} \cdot 65} = \frac{4\sqrt{65}}{65}$   
 $\cos B = \frac{7\sqrt{65}}{\sqrt{65} \cdot 65} = \frac{7\sqrt{65}}{65}$   
 $\tan B = \frac{4}{7}$



10. Find x in the following in degrees and radians

$\sin^{-1} \sin x = .5 \Rightarrow x = 30$  or  $\frac{\pi}{6}$      $\cos^{-1} \cos x = .5 \Rightarrow x = 60$  or  $\frac{\pi}{3}$      $\tan^{-1} \tan x = 1 \Rightarrow x = 45$  or  $\frac{\pi}{4}$

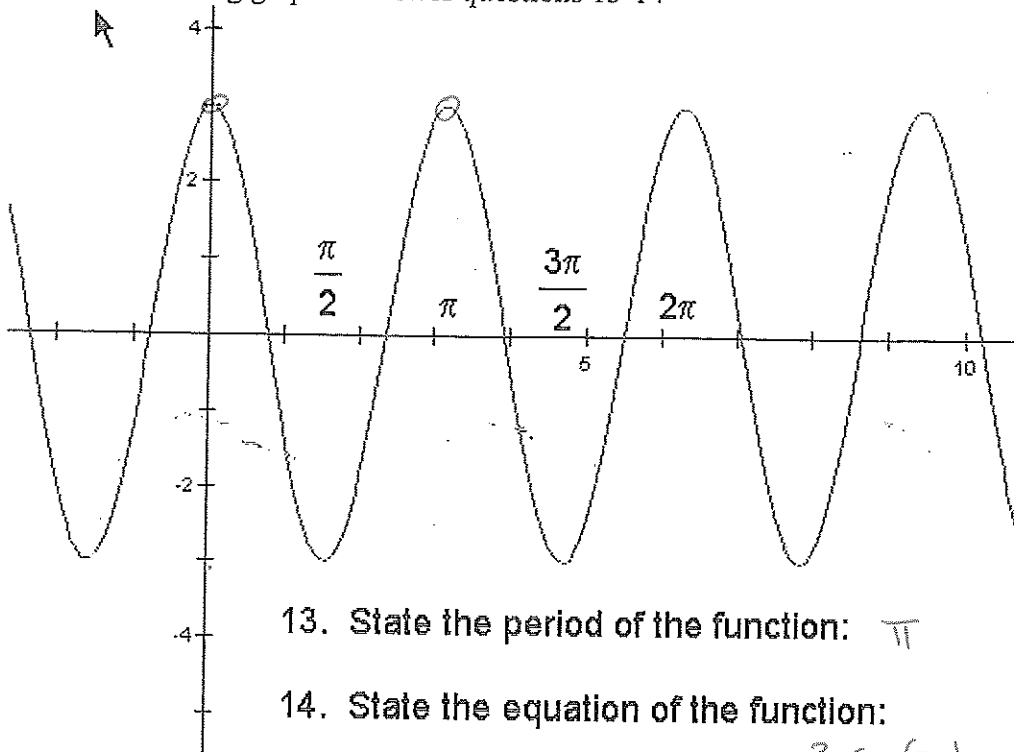
11. State the 6 trig ratios of a triangle in the standard position if the point with the coordinates (5, 12) lies on the terminal side.



$\sin \theta = \frac{12}{13}$      $\csc \theta = \frac{13}{12}$   
 $\cos \theta = \frac{5}{13}$      $\sec \theta = \frac{13}{5}$   
 $\tan \theta = \frac{12}{5}$      $\cot \theta = \frac{5}{12}$

12.  $\cot(\cos^{-1} \frac{1}{2}) = \cot 60$   
 $\frac{1}{\tan 60} = .577$

Use the following graph to answer questions 13-14



13. State the period of the function:  $\pi$

14. State the equation of the function:

$y = 3 \cos(2x)$

$per = \frac{2\pi}{K}$   
 $\frac{\pi}{1} = \frac{2\pi}{K}$   
 $K = 2$

Use the function  $y = x^3 - 3x^2 + x - 3$  to answer questions 15-16

15. State the critical points and state if they are max or min values

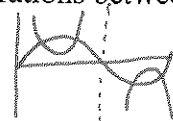
Max:  $(.18, -2.91)$  Min:  $(1.82, -5.09)$

16. State the intervals of increasing and decreasing

INC:  $(-\infty, .18] \cup [1.82, \infty)$   
 Dec:  $[.18, 1.82]$

17. Graph the following and state all solutions between  $0 < x < 2\pi$

$y = \csc x$   
 $y = 2 \sin x$



$(.78, 1.41), (2.36, 1.41), (3.93, -1.41), (5.99, -1.41)$

18. The height of a ball is measured over time when thrown into the air.

Time (sec)	0	.2	.4	.6	.8	1
Height (ft)	5.2	18.2	27.5	29.4	19.8	6.5

Use the table of values to answer the following questions.

Write a model for the path of the ball over time

Use the model to predict the height at time = .3 seconds

Use the model to predict when the ball would reach a height of 25 feet

$y = -92.5x^2 + 94.3x + 4.5$

at  $x = .3$   $y = 24.5$

$y = 25$  at  $x = .308 \text{ \& } .702$

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