Q2 Cumulative Review

Here are some sample problems. This isn't exhaustive but should give you an idea of the breadth of the quiz and the types of questions.

Unit Circle

1. $\sin 5\pi/6$, $\cot \pi$, $\cos 9\pi/4$, careful with 0 vs undefined! denominator = 0 is undefined.

All 6 Trig functions in all 4 quadrants

3. If $\sin\theta = -1/2$ and θ is in the third quadrant what is $\cos\theta$
4. If $\cos\theta = \sqrt{3}/2$ and θ is in the fourth quadrant what is $\cos(2\theta)$

Triangles

1. The point (4,3) is on the terminal side of an angle in standard position. Determine the value of all 6 trig functions of the angle.
2. The point (-9,-11) is on the terminal side of an angle in standard position. Determine the value of all 6 trig functions of the angle.

SohCahToa

1. In right triangle ACB, C is a right angle and $A = \pi/3$. If $b = 9\sqrt{3}$ find a.

Law of Sines

1. In triangle ABC, if $A = 40°$ and $B = 80°$ and $a = 12$, find b (calc)
2. In triangle ABC, if $A = 40°$ and $b = 23$ and $a = 12$, find B (calc)

Law of Cosines

1. In triangle ABC if $a = 10$ and $b = 12$ and $C = 43°$, find c
2. In triangle ABC if $a = 10$ and $b = 12$ and $c = 17.5$, find C
3. Why does $a = 5, b = 10, c = 20$ have no solution?

Trig Equations

1. Using inverse trig functions to solve for x:

- Solve $\sin x = -\sqrt{3}/2$. Solve $\csc x = 2$. Solve $\cot x = \infty$.
  - Remember if $\sin(\theta) = 1/2$, you can replace this with $y(\theta) = 1/2$. Where on the unit circle is $y = 1/2$? (answer is $\pi/6$ and $5\pi/6$.)
  - Similarly for $\cos\theta$ and $x(\theta)$.
  - Tangent is y/x which is the slope. So where is the slope of a line from the center to the unit circle point equal to the given value?

2. Finding all solutions (e.g. all solution on unit circle. There's almost always 2 at least)
3. Finding general solutions (take solution(s) and add $2k\pi$ for sin/cos and $k\pi$ for tan)
   - Find the general solution to $2\sqrt{2}\sin(x) = -\sqrt{6}$.
   - Find the general solution to $\tan^2(x) = 3$

- Find the general solution to $\tan^2(3x) = 3$

Trig Graphing

Amplitude, Phase Shift, Vertical Shift, Period

- $y = A\sin(B(x + C)) + D$ has amplitude A, phase shift $-C$, vertical shift D and period $2\pi/B$
- $y = D + A\sin(B(x + C))$ is the same!
- tan has period π/B
- Match graph to equation
- Write equation from graph and/or properties
  - Write a sin function with amplitude 5 and period 4
  - Write a tan function with period $\pi/5$ and vertical shift -2
  - Domain Range of $\sin\cos\tan$. Remember domain restrictions when $\tan x$ is undefined.

Trig Identities

- Addition and Subtraction Identities
- Double angle identities
- Reciprocal Identities
- Pythagorean identities
- No proofs, but know valid steps
- Problems like $\sin(15°)$ and $\cos(7\pi/12)$ which you get from using identities on the unit circle.

Conics

(review using your recent notes!)

- Equations of Circle and Ellipse
- Center, Radius, Vertex, Focus, Major/Minor Axis
- Matching graph to equation / Write equation given information
- Questions like quiz questions

In general

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* Calc and non-calc questions
* Multiple Choice / Matching
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