Trig Review “Activity” (flipped lesson) – basic outline

**Part 1**: Students need to know or review basic triangle trig:

$$\frac{1}{2}$$

1

$$\frac{\sqrt{3}}{2}$$

**30-60-90 Triangle Relationships:**

$$\frac{\sqrt{2}}{2}$$

1

**45-45-90 Triangle Relationships:**

$$\frac{\sqrt{2}}{2}$$

**Other Background Knowledge:**

tan $θ$ = $\frac{opp}{adj}$ so, tan 30$°$ = $\frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}} $= $\frac{1}{\sqrt{3}}$ = $\frac{\sqrt{3}}{3}$ and tan 60$°$ = $\frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}}$ = $\sqrt{3}$

**Part 2:** Building Unit Circle:

Click [here](http://www.youtube.com/watch?v=qTbDQ9gkKJg) to watch a YouTube video and build the unit circle. (Sketch your circle on a separate piece of paper and fill in the values as shown in the video)

Y

X

**Part 3: Examine the behavior of trig functions.**

Recall tan $θ$ $\frac{\sin(θ)}{\cos(θ)}$. So, tan $θ$ will be undefined when cos $θ$ = 0. For what values of $θ$ does this occur?

Complete the table using the unit circle values from the **first quadrant**.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| $$θ$$ | cos $θ$ | sin $θ$ | tan $θ=$ $\frac{\sin(θ)}{\cos(θ)}$ | tan $θ=$ $\frac{\sin(θ)}{\cos(θ)}$ (rounded to nearest tenth) |
| 0 |  |  |  |  |
| $$\frac{π}{6}$$ |  |  |  |  |
| $$\frac{π}{4}$$ |  |  |  |  |
| $$\frac{π}{3}$$ |  |  |  |  |
| $$\frac{π}{2}$$ |  |  |  |  |

Examine the values of tan $θ$ as the measure of the angle goes from 0 to $\frac{π}{2}$.

Do the values for tan $θ$ get larger or smaller as $θ$ goes from 0 to $\frac{π}{2}$?

Complete the table using the unit circle values from the **fourth quadrant**.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| $$θ$$ | cos $θ$ | sin $θ$ | tan $θ$ $\frac{\sin(θ)}{\cos(θ)}$ | tan $θ$ $\frac{\sin(θ)}{\cos(θ)}$ (rounded to nearest tenth) |
| 0 |  |  |  |  |
| $$-\frac{π}{6}$$ |  |  |  |  |
| $$-\frac{π}{4}$$ |  |  |  |  |
| $$-\frac{π}{3}$$ |  |  |  |  |
| $$-\frac{π}{2}$$ |  |  |  |  |

What happens numerically to tan $θ$ as it moves clockwise from 0 to $-\frac{π}{2}$ ?

Use the information from the previous tables to sketch a graph of tan $θ$ for $θ$ = $-\frac{π}{2}$ to $θ$ = $\frac{π}{2}$.

QIII

QII

QI

QIV

Use your graphing calculator (or other graphing software) to confirm the sketch of your graph. (Be sure your calculator is set to radian mode and set your window to ZTRIG. On a TI-84, you do this by using the ZOOM button and choosing option 7).

Describe the behavior of the graph in Quadrant II and Quadrant III. What does this tell you about the period of tan $θ$?