Solving Simple Trig Equations   Math Analysis   Name____________________________
Notes-Examples   Date_________________Block______

I. Solving Trigonometric Equations **without** the calculator.

- Note the constraints of the answer.
- Determine the angle (quadrantal or reference) that will produce the given ratio.
- Sketch the _____________________ angle in the quadrant(s) that will produce the given ______________ of the ratio.
- Determine the actual angle within the given constraints that will produce the given ratio.
  - If the reference angle is in Quadrant I, then the _________________________angle is the answer.
  - If the reference angle is in Quadrant II, _________________________ from 180° $or\ \pi$.
  - If the reference angle is in Quadrant III, _________________________ to 180° $or\ \pi$.
  - If the reference angle is in Quadrant IV, subtract from______________ or _____________.

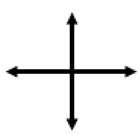
$Solve\ for\ \theta$ $\boldsymbol{without}$ $the\ calculator$. Answer in **exact** values.

#1 – 2. $\mathbf{0° \le \boldsymbol{\theta} \le 90°}$

1. $\tan\theta = \sqrt{3}$

$\theta' =$

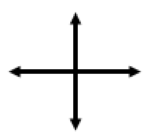
$\theta =$



2. $\sec\theta = \frac{2\sqrt{3}}{3}$

$\theta' =$

$\theta =$

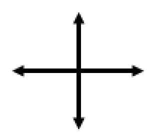


#3 – 4. $\mathbf{0 \le \boldsymbol{\theta} \le \frac{\pi}{2}}$

3. $\sin\theta = 0$

$\theta' =$

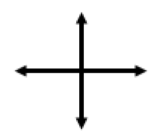
$\theta =$



4. $\cot\theta = 1$

$\theta' =$

$\theta =$

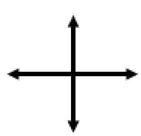


#5 – 7. $\mathbf{0°} \le \boldsymbol{\theta} < 360°$

5. $\cos\theta = -\frac{\sqrt{2}}{2}$

$\theta' =$

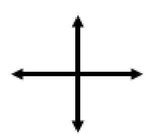
$\theta =$



6. $\cot\theta = \sqrt{3}$

$\theta' =$

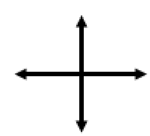
$\theta =$



7. $\sin\theta = -\frac{1}{2}$

$\theta' =$

$\theta =$

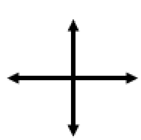


#8 – 10. $\mathbf{0} \le \boldsymbol{\theta} < 2\boldsymbol{\pi}$

8. $\sec\theta = 2$

$\theta' =$

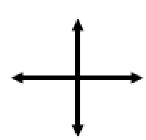
$\theta =$



9. $\tan\theta = -1$

$\theta' =$

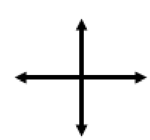
$\theta =$



10. $\csc\theta = und$

$\theta' =$

$\theta =$



II. Solving Trigonometric Equations **with** the calculator.

- Note the constraints of the answer.
- Determine the reference angle using the calculator.
  - Check the mode on the calculator.
  - Use the inverse Trig functions (sin^{-1} , cos^{-1} or tan^{-1}) to determine the reference angle given the ratio of the function. Use **<u>only</u>** the **POSITIVE** ratio to determine the reference angle. Record and store the value of the reference angle in your calculator.

- Sketch the _____________________ angle in the quadrant(s) that will produce the given ______________ of the ratio.
- Determine the actual angle within the given constraints that will produce the given ratio.
  - If the reference angle is in Quadrant I, then the _________________________angle is the answer.
  - If the reference angle is in Quadrant II, _________________________ from 180° $or\ \pi$.
  - If the reference angle is in Quadrant III, _________________________ to 180° $or\ \pi$.
  - If the reference angle is in Quadrant IV, subtract from______________ or _____________.

$Solve\ for\ \theta\ \boldsymbol{with}\ the\ calculator.$ Round answer in to 3 decimal places
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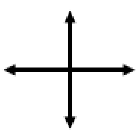
#1 – 2. $0° \leq \boldsymbol{\theta} \leq 90°$

1. $\tan\theta = 3.15$

$\theta' =$

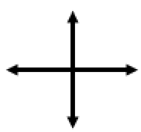
$\theta =$



2. $\csc\theta = 1.76$

$\theta' =$

$\theta =$

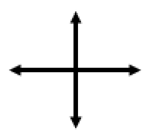


#3 – 4. $\boldsymbol{0 \leq \theta \leq \frac{\pi}{2}}$

3. $\cos\theta = \frac{4}{9}$

$\theta' =$

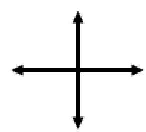
$\theta =$



4. $\cot\theta = \frac{5}{11}$

$\theta' =$

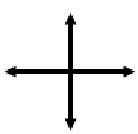
$\theta =$



#5 – 7. $0° \leq \boldsymbol{\theta} < 360°$

5. $\sin\theta = -0.843$

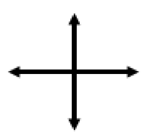
$\theta' =$



$\theta =$

6. $\sec\theta = \frac{15}{7}$

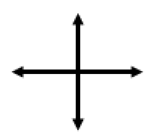
$\theta' =$



$\theta =$

7. $\tan\theta = -\frac{8}{13}$

$\theta' =$

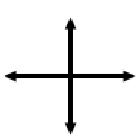


$\theta =$

#8 – 10. $\boldsymbol{0 \leq \theta < 2\pi}$

8. $\csc\theta = 4.5$

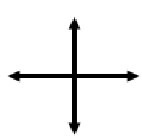
$\theta' =$



$\theta =$

9. $\cos\theta = -\frac{5}{8}$

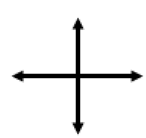
$\theta' =$



$\theta =$

10. $\cot\theta = 8.06$

$\theta' =$



$\theta =$