1.7 REFERENCE ANGLES

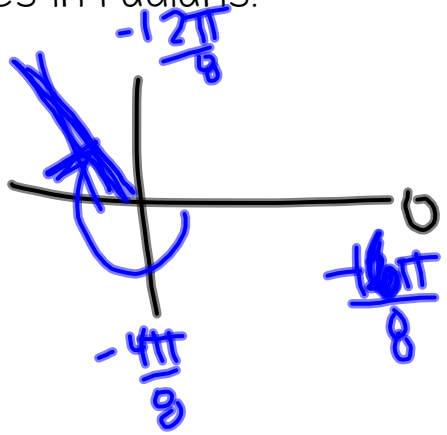
Turn in signed progress reports.

WARM-UP TUESDAY

Graph the following angles in radians.

a. $\frac{5\pi}{7}$

b. $-\frac{11\pi}{8}$



ABOUT ME

1. If you could go to any college, where would it be?
2. Would you rather have a critically acclaimed, great song that makes you no money, or a song that everyone hates that makes a ton of money?

Name:_____

1.6 Radians

Find the radian measure of the angle with the given degree measure

1. 72^0 2. -45^0 3. -75^0 4. 1080^0

Find the degree measure of the angle with the given radian measure

5. $\frac{7\pi}{6}$ 6. $-\frac{5\pi}{4}$ 7. $\frac{5\pi}{18}$ 8. 13

Find two positive and two negative coterminal angles for the given radian measure $\pm 2\pi$

9. $\frac{3\pi}{4}$

10. $\frac{-5\pi}{8}$ $+\frac{16\pi}{8}$ ⊕ $\frac{11\pi}{8}$ $+\frac{16\pi}{8}$

⊖ $-\frac{5\pi}{8}-\frac{16\pi}{8}=\frac{-21\pi}{8}$ ⊕ $\frac{27\pi}{8}$

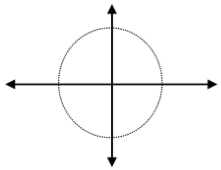
⊖ $-\frac{21\pi}{8}-\frac{16\pi}{8}=\frac{-37\pi}{8}$

Find an angle between 0 and 2π that is coterminal with the given angle

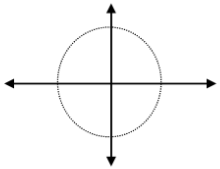
11. $\frac{17\pi}{6}$ 12. $-\frac{7\pi}{3}$ 13. 87π 14. $\frac{17\pi}{4}$

Graph the following angles. Label π and 2π on your graph with a common denominator. Remember to find a coterminal angle between 0 and 2π if necessary.

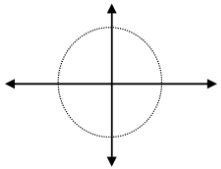
15. $\frac{\pi}{5}$



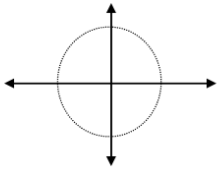
16. $-\frac{7\pi}{8}$



17. $\frac{25\pi}{12}$

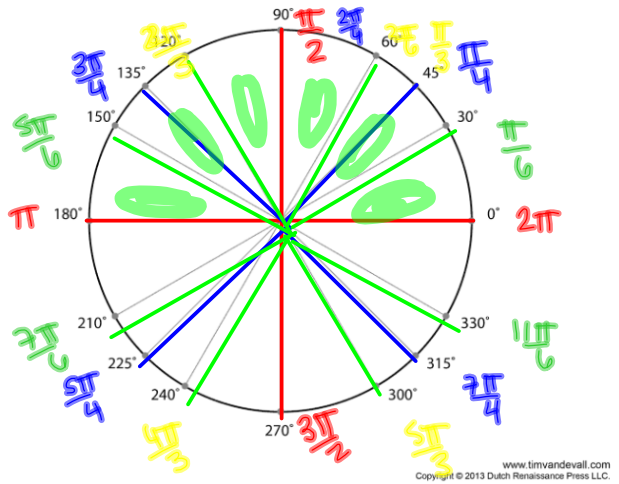


18. $\frac{8\pi}{9}$



WITHOUT NOTES: Fill in the radian values. Try to look at the values as a part to the whole circle instead of converting every degree value.

The Unit Circle - Degrees



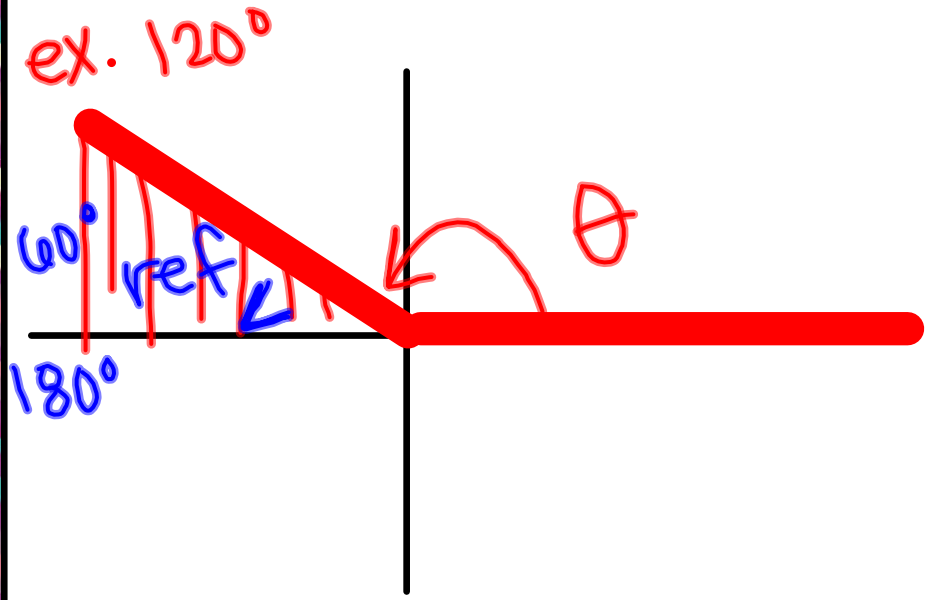
1.7 REFERENCE ANGLES

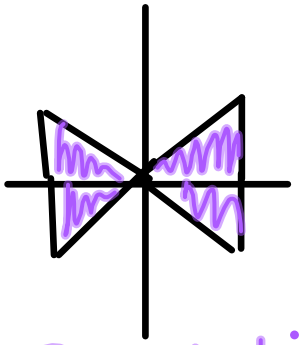
EQ: How do I find a reference angle of an angle in any quadrant?

REFERENCE ANGLE:

- Formed with the x-axis
- Always Positive
- Acute ($< 90°$)

HOW FAR AWAY FROM THE X-AXIS IS YOUR ANGLE??





"Bow tie"

1.7 REFERENCE ANGLES

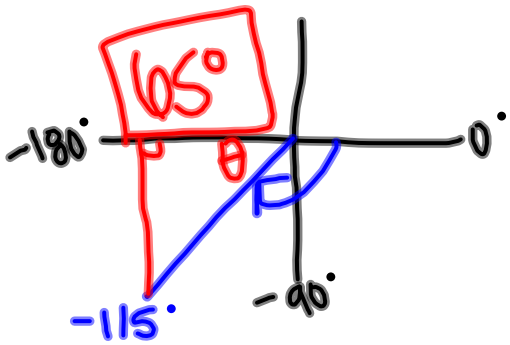
EQ: How do I find a reference angle of an angle in any quadrant?

HOW FAR AWAY FROM THE X-AXIS IS YOUR ANGLE??

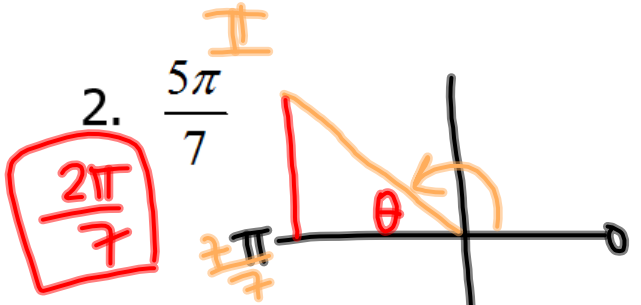
Identify in which quadrant (or on which axis) each angle lies and then find the reference angle. If the problem is given in degrees, leave your answer in degrees. If the problem is given in radians, leave your answer in radians.

1. -115° III

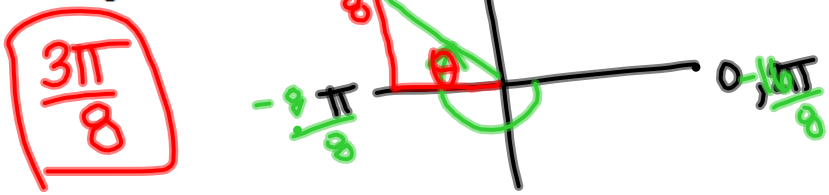
① Draw angle
② Draw vertical line to X-axis
③ How far away?



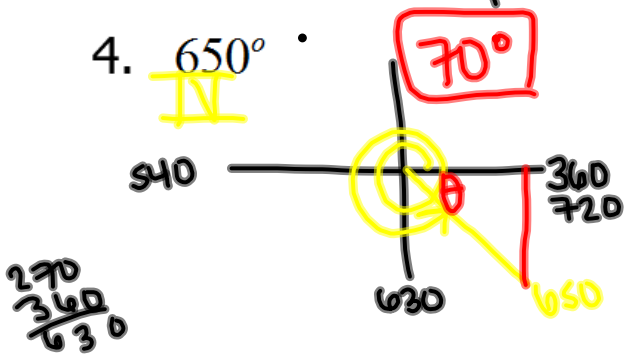
2. $\frac{5\pi}{7}$ II



3. $-\frac{11\pi}{8}$ II



4. 650° IV



1.7 REFERENCE ANGLES

EQ: How do I find a reference angle of an angle in any quadrant?

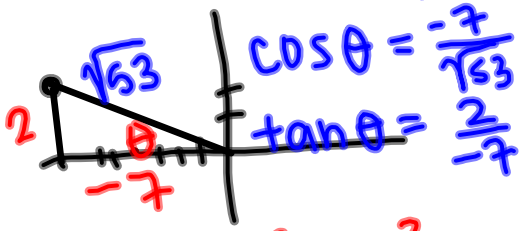
HOW FAR AWAY FROM THE X-AXIS IS YOUR ANGLE??

Hypotenuse is positive!!

Find the exact values of the six trig functions of an angle θ whose terminal side passes through the given point.

SOHCAHTOA

5. $(-7,2)$ $\sin\theta = \frac{2}{\sqrt{53}}$ etc. 6. $(3,-1)$



$\cos\theta = \frac{-7}{\sqrt{53}}$

$\tan\theta = \frac{2}{-7}$

$2^2 + (-7)^2 = c^2$

$4 + 49 = c^2$

$\sqrt{53} = \sqrt{c^2}$

1.7 REFERENCE ANGLES

EQ: How do I find a reference angle of an angle in any quadrant?

HOW FAR AWAY FROM THE X-AXIS IS YOUR ANGLE??

Find the exact value of the other five trig functions of θ if θ terminates in the given quadrant and has the given function value.

7. QIV, $\sin\theta = -\frac{3}{4}$

8. QI, $\cot\theta = \frac{4}{3}$

1.7 .Reference Angles ODDS **Name:**_____

Identify in which quadrant (or on which axis) each angle lies and then find the reference angle. Draw the reference angle in the appropriate quadrant for numbers (1-4). If the problem is given in degrees, leave your answer in degrees. If the problem is given in radians, leave your answer in radians.

1. 125°

2. $\frac{13\pi}{9}$

3. $-\frac{2\pi}{5}$

4. 400°

5. -110°

6. $\frac{20\pi}{9}$

7. 22°

8. $\frac{7\pi}{8}$

9. -385°

10. $-\frac{41\pi}{15}$

11. $\frac{29\pi}{8}$

12. 245°

Find the exact values of the six trig functions of an angle θ whose terminal side passes through the given point.

13. $(3,-4)$

14. $(-7,-5)$

15. $(-5,12)$

16. $(2,3)$

Find the exact value of the other five trig functions of θ if θ terminates in the given quadrant and has the given function value.

17. QII, $\sec\theta = -\frac{5}{4}$

18. QIII, $\tan\theta = \frac{1}{3}$

1.7 REFERENCE ANGLES

EQ: How do I find a reference angle of an angle in any quadrant?

HOW FAR AWAY FROM THE X-AXIS IS YOUR ANGLE??

CLOSING

Find the reference angle for the angles below. Leave degrees in degrees and radians in radians.

a. $\frac{7\pi}{6}$

b. 150°