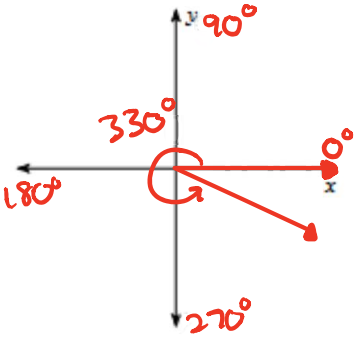
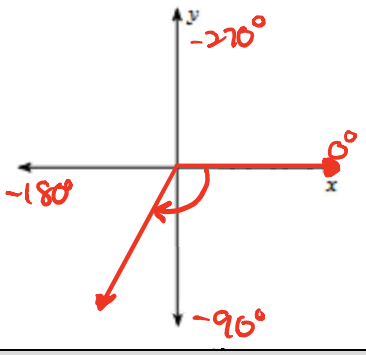
PRACTICE

Draw an angle with the given measure in standard position.

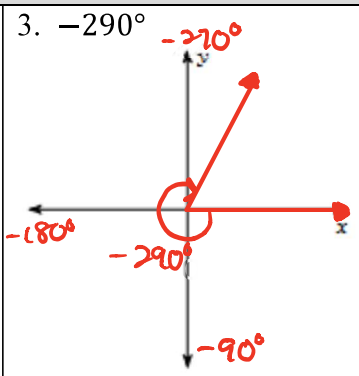
1. 330°



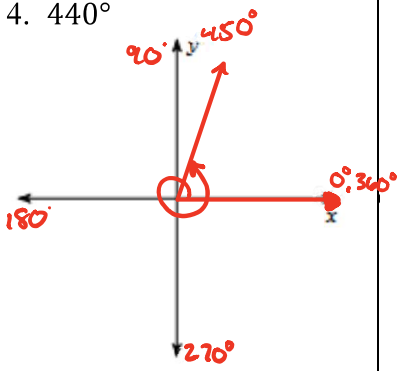
2. −115°



3. −290°

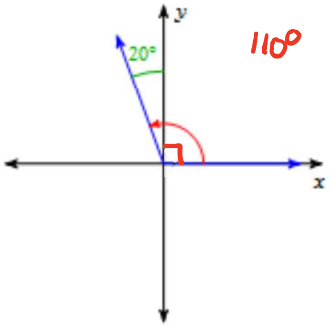


4. 440°

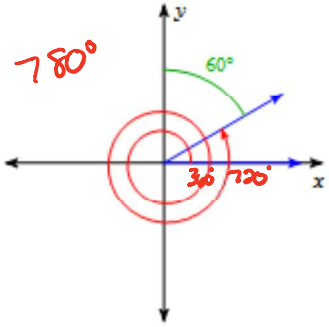


Find the measure of each angle.

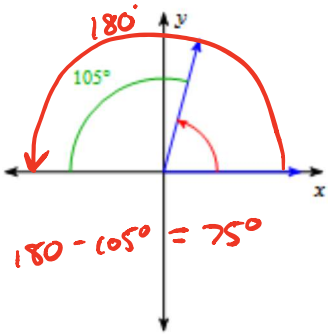
5.



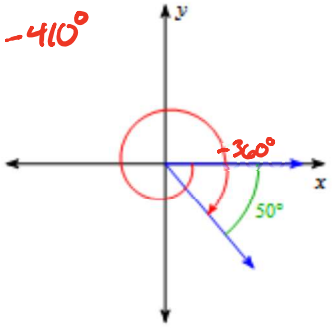
6.



7.



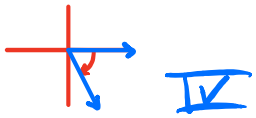
8.



State the quadrant in which the terminal side of each angle lies.

9. −446°

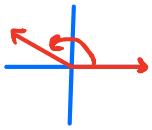
$-446° + 360° = -86°$



IV

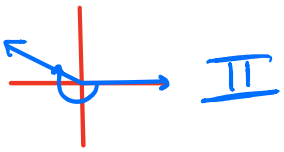
10. 870°

$870 - 720° = 150$



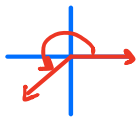
II

11. −190°



II

12. 215°



III

Find one positive and one negative coterminal angle the angle given.

13. 30°

+ Coterminal $\angle$: $30° + 360° = 390°$

− Coterminal $\angle$: $30° - 360° = -330°$

14. −705°

+ Coterminal $\angle$: $-705° + 720 = 15°$

− Coterminal $\angle$: $-705° + 360 = -345°$

Find a coterminal angle between 0° and 360°.

15. −45°

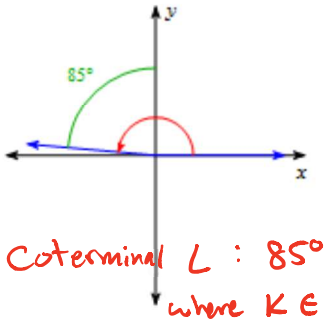
Coterminal $\angle$: $-45° + 360° = 315°$

16. 435°

Coterminal $\angle$: $435° - 360° = 75°$

Find ALL coterminal angles.

17.



Coterminal $\angle$: $85° + 360°k$ where $k \in \mathbb{Z}$

18. $-200°$

Coterminal $\angle$: $-200° + 360°k$ where $k \in \mathbb{Z}$

19. $90°$

Coterminal $\angle$: $90° + 360°k$ where $k \in \mathbb{Z}$

Convert to decimal degree.

20. $43°20'$

$\left(43 + \frac{20}{60}\right)^\circ = 43.333°$

21. $125°25'30''$

$\left(125 + \frac{25}{60} + \frac{30}{3600}\right)^\circ = 125.425°$

22. $61°52'17''$

$\left(61 + \frac{52}{60} + \frac{17}{3600}\right)^\circ = 61.871°$

23. $-28°5'42''$

$-\left(28 + \frac{5}{60} + \frac{42}{3600}\right)^\circ = -28.095°$

Convert to degrees, minutes, and seconds.

24. $42.35°$

$.35(60) = 21'$

$42° 21'$

25. $142.125°$

$.125(60) = 7.5'$

$.5(60) = 30''$

$142° 7' 30''$

26. $-60.4°$

$.4(60) = 24'$

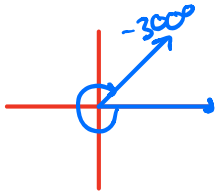
$-60° 24'$

27. $218.68°$

$.68(60) = 40.8'$

$.8'(60) = 48''$

$218° 40' 48''$

Determine if the statement is true or false. If it is false, give a counterexample.	
28. If the terminal side of an angle in standard position lies in quadrant I, then the angle is positive.	29. If the initial and terminal sides of an angle coincide, then the measure of the angle is zero.
False 	True.

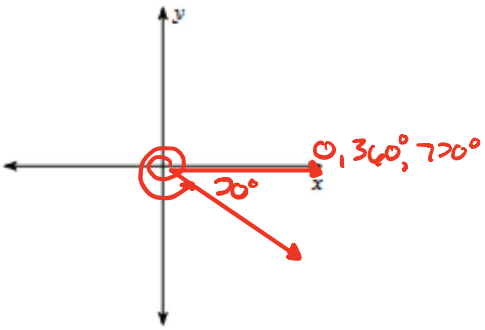
Skillz Review Simplify the following.			
1. $\frac{\frac{1}{2}\cdot 4^2}{\frac{3}{4}\cdot 4} = \frac{2}{3}$	2. $\frac{\frac{1}{2}\cdot 4^2}{\frac{\sqrt{3}}{4}\cdot 4} = \frac{2}{\sqrt{3}}\cdot\frac{\sqrt{3}}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$	3. $\frac{3}{\left(\frac{\sqrt{3}}{4}\right)\cdot 4}$ $3 = \frac{12}{\sqrt{3}}\cdot\frac{\sqrt{3}}{\sqrt{3}} = \frac{12\sqrt{3}}{3} = 4\sqrt{3}$	4. $\frac{\left(\frac{\sqrt{3}}{4}\right)\cdot 4}{\sqrt{2}}\cdot 4 = \frac{\sqrt{3}}{4\sqrt{2}}\cdot\frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{6}}{4\cdot 2} = \frac{\sqrt{6}}{8}$

8.1 Angles and Degrees

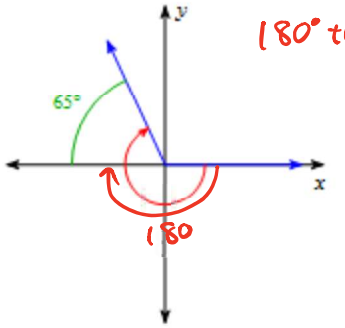
APPLICATION

1. Draw an angle with the given measure.

700°



2. Name ALL coterminal angles.

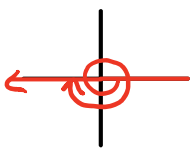


180° + 65° = 245°

$-245° + 360°k$ where $k \in \mathbb{Z}$

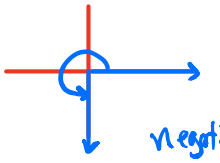
3. One complete revolution or one complete rotation is 360°. Given the initial side of angle is in standard position, determine which axes or quadrant the terminal side of the angle would fall if…

a. 1.5 revolutions clockwise



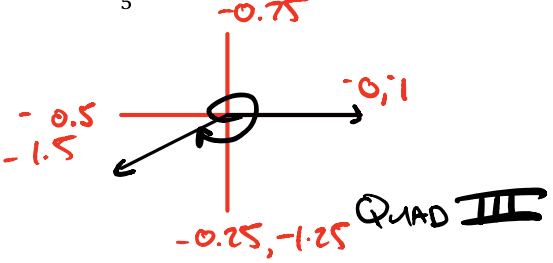
negative x-axis

b. $\frac{3}{4}$ rotation counterclockwise



negative y-axis

c. $\frac{7}{5}$ rotations clockwise $= 1.4$



4. Mr. Bean loves the half pipe and wants to try a Ollie Fakey-to-Air Double McTwist 1280.

a. How many revolutions will he make to complete the 1280?

$\frac{1280^\circ}{360^\circ} = 3.5$

b. If Bean leaves the half pipe at the exact same spot, is a Poptart 540 coterminal to a Lando-Roll 1440? Justify.

$540 + 360k = 1440$

$360k = 900$

$k = 2.5$

no because 540° and 1440° are not coterminal Δs.

5. Mr. Brust rides his unicycle over a line of fresh paint. He continues to ride in a straight line leaving marks that are 6.5 feet apart. What is the radius of Mr. Brust's unicycle tire?

$C = 2\pi r$

$6.5 = 2\pi r$

$\frac{3.25}{\pi} = r$

$1.03 \text{ feet} = r$

6. Farmer Kelly drives his tractor in a straight line. The back tire has a diameter of 4.5 feet and the front tire has a radius of 1.2 feet.

$C_B = \pi d$

$= \pi(4.5)$

$C_B = 4.5\pi$

$C_f = 2\pi r$

$= 2\pi(1.2)$

$C_f = 2.4\pi$

a. If the back tire makes 16 revolutions, how many revolutions does the front tire make?

BACK

Linear distance $= (\#\text{Rev})(C)$

$= 16(4.5\pi)$

$= 72\pi$

Front

Linear distance $= (\#\text{Rev})C$

$72\pi = \#\text{Rev}(2.4\pi)$

$30 = \#\text{Rev}$

The linear distance traveled is the same for the front and back tire

b. If the back tire makes ¾ of a revolution, how many revolutions does the front tire make?

$\frac{16 \text{ rev back}}{30 \text{ Rev front}} = \frac{\frac{3}{4} \text{ rev back}}{x}$

$16x = 22.5$

$x \approx 1.4$

c. The back tire makes 80 revolutions per minute (rpm), how fast is the front tire?

$\frac{16 \text{ rev back}}{30 \text{ Rev fnt}} = \frac{80 \text{ rpm}}{x}$

$16x = 2400$

$x = 150$

150 rpm