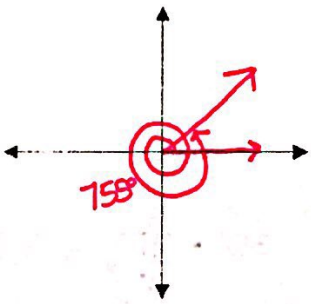
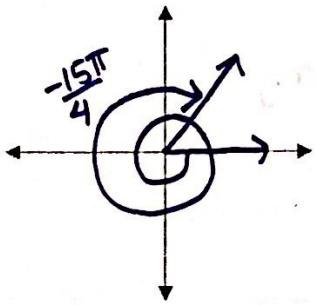
PreCalculus REVIEW – Angles and Their Measures Name _____ Per____

Sketch each angle in standard position.

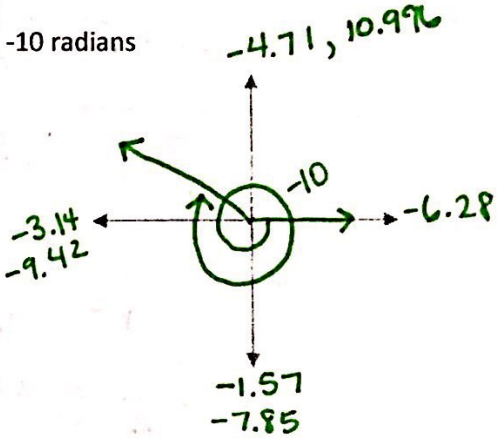
1. 755^0



2. $-\frac{15\pi}{4}$



3. -10 radians



Conversions: Write the equivalent quantity in the form indicated.

4. Write in DMS form

$\theta = 330.725°$

330.725 [2ND] [APPS] [4]

330° 43' 30"

5. Write as a degree in decimal form

$\theta = 45°19'26"$

45 [2ND] [APPS] [1]
19 [2ND] [APPS] [2]
26 [ALPHA] [+] [ENTER]

45.32388̄°

6. Convert to radians

$\theta = -575°$

$-575° \cdot \frac{\pi}{180°} = \frac{-115\pi}{36}$

7. Convert to Degrees

$\theta = \frac{11\pi}{9}$

$\frac{11\pi}{9} \cdot \frac{180°}{\pi} = 220°$

Problems.

8. Given a circle with radius 15 cm, find the length of the arc intercepted by a central angle of $\frac{5\pi}{3}$ radians.

$S = 15\left(\frac{5\pi}{3}\right)$

$\boxed{S = 78.5 \text{ cm}}$

9. Given a circle with diameter 10 inches, find the area of the sector created by a central angle of 235°.

$r = 5$ in

$235° \cdot \frac{\pi}{180°} = \frac{47\pi}{36}$

$A = \frac{1}{2}(5)^2\left(\frac{47\pi}{36}\right)$

$\boxed{A = 51.3 \text{ in}^2}$

10. Find the area of a sector of a circle with a radius of 12 cm and a central angle of 137°

$137° \cdot \frac{\pi}{180°} = \frac{137\pi}{180}$

$A = \frac{1}{2}(12)^2\left(\frac{137\pi}{180}\right)$

$\boxed{A = 172.2 \text{ cm}^2}$

11. Given a sector of a circle that has an area of 326 square inches, and a central angle that intercepts the arc of 218°, find the diameter of the circle

$218° \cdot \frac{\pi}{180°} = \frac{109\pi}{90}$

$2(326) = \left(\frac{1}{2}r^2\left(\frac{109\pi}{90}\right)\right)^2$

$652 = \frac{109\pi}{90} r^2$

$\frac{109\pi}{90} \quad \frac{109\pi}{90}$

$\sqrt{171.3617} = \sqrt{r^2}$

$13.1 = r$

$d = 13.1(2) = \boxed{26.2 \text{ in}}$

10. A carousel rotates around its axis at a rate of 8 revolutions per minute. If the outside horses on the ride are 35 feet from the center, and the innermost horses on the ride are 20 feet from the center, calculate each of the following.

(a) The linear speed of the inner horses (in feet per second)?

(b) The linear speed of the outer horses (in miles per hour)?

(c) The angular speed of the horses (in degrees per second)?

(d) The angular speed of the horses (in radians per second)?

(a) $\frac{8 \text{ rev}}{1 \text{ min}} \cdot \frac{2\pi(20 \text{ ft})}{1 \text{ rev}} \cdot \frac{1 \text{ min}}{60 \text{ sec}} = \boxed{16.8 \text{ ft/sec}}$

(b) $\frac{8 \text{ rev}}{1 \text{ min}} \cdot \frac{2\pi(35 \text{ ft})}{1 \text{ rev}} \cdot \frac{1 \text{ mi}}{5280 \text{ ft}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} = \boxed{20.0 \text{ mi/hr}}$

(c) $\frac{8 \text{ rev}}{1 \text{ min}} \cdot \frac{360°}{1 \text{ rev}} \cdot \frac{1 \text{ min}}{60 \text{ sec}} = \boxed{48°/\text{sec}}$

(d) $\frac{8 \text{ rev}}{1 \text{ min}} \cdot \frac{2\pi \text{ rad}}{1 \text{ rev}} \cdot \frac{1 \text{ min}}{60 \text{ sec}} = \boxed{0.838 \frac{\text{rad}}{\text{sec}}}$