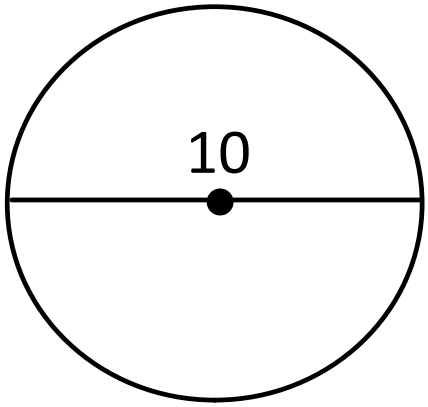
$$A_{\text{circle}} = \pi r^2$$



$A = \pi 5^2$

$\boxed{= 25\pi \ u^2}$

Find the radius of a circle whose area is 112.8 ft^2

$A = \pi r^2$

$\frac{112.8}{\pi} = \frac{\cancel{\pi} r^2}{\cancel{\pi}}$

$\sqrt{r^2} = \sqrt{\frac{112.8}{\pi}}$

$r = \sqrt{\frac{112.8}{\pi}} \cdot \frac{\sqrt{\pi}}{\sqrt{\pi}}$

$\boxed{r = \frac{\sqrt{112.8\pi}}{\pi} \text{ ft}}$

$r \approx 5.992$ ft

Find the circumference of a circle whose area is 784π

$A = \pi r^2$

$\frac{784\cancel{\pi}}{\cancel{\pi}} = \frac{\cancel{\pi} r^2}{\cancel{\pi}}$

$r = 28$

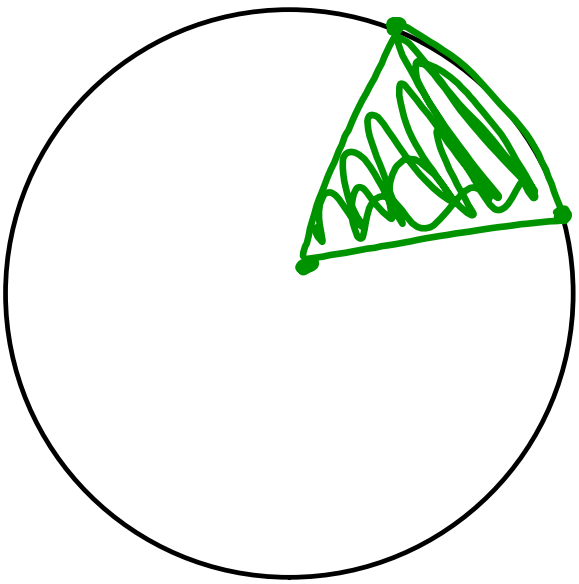
$C = 2\pi r$

$= 2\pi(28)$

$\boxed{= 56\pi \text{ u}}$

Def'n:

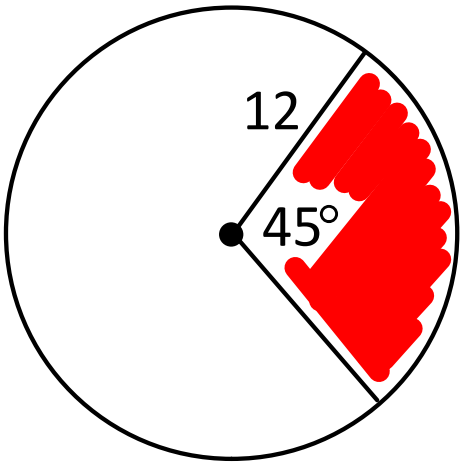
A SECTOR of a circle is the region bounded by 2 radii and an arc of the circle.



Formula for Area of a Sector:

$$\frac{\text{Area of Sector}}{\text{Area of Circle}} = \frac{m\overset{\frown}{\ }}{360^\circ}$$

Find the area of the sector

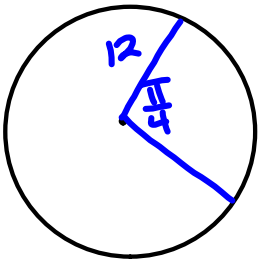


$$\frac{x}{\pi r^2} = \frac{45^\circ}{360^\circ}$$

$$\frac{x}{144\pi} = \frac{1}{8}$$

$$8x = 144\pi$$

$$\boxed{x = 18\pi \ u^2}$$



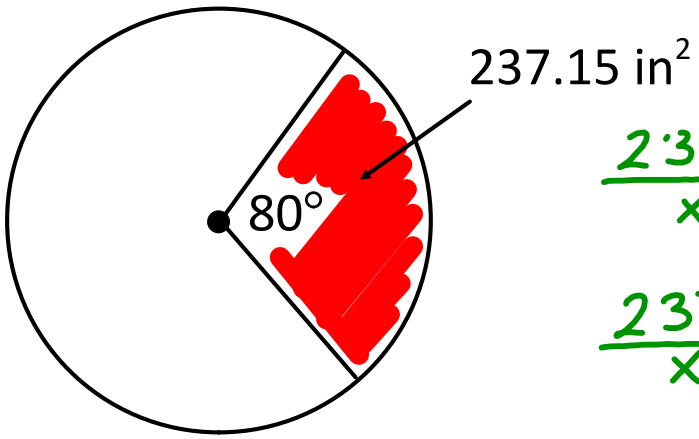
$$\frac{x}{144\pi} = \frac{\frac{\pi}{4}}{2\pi}$$

$$\frac{x}{144\pi} = \frac{1}{8}$$

$$\boxed{x = 18\pi \ u^2}$$

$$\frac{\pi}{4} \cdot \frac{1}{2\pi} = \frac{1}{8}$$

Find the area of the circle



$$\frac{237.15}{x} = \frac{80^\circ}{360^\circ}$$

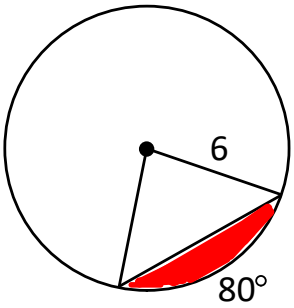
$$\frac{237.15}{x} = \frac{2}{9}$$

$$2x = 2134.35$$

$$x = \frac{2134.35}{2}$$

$$x = 1067.175 \text{ in}^2$$

Find the area of the *segment*



$$A_{segment} = \underbrace{A_{sector}}_{8\pi} - \underbrace{A_\Delta}_{36\cos 40^\circ \cdot \sin 40}$$

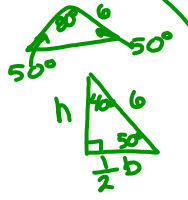
$$A_{sector} = \frac{x}{36\pi} = \frac{80}{360}$$

$$= \frac{x}{36\pi} = \frac{2}{9}$$

$$= 9x = 72\pi$$

$$x = 8\pi$$

$$A_\Delta = \frac{1}{2} b \cdot h$$



$$\cos 40^\circ = \frac{h}{6}$$

$$h = 6\cos 40^\circ$$

$$\sin 40^\circ = \frac{\frac{1}{2}b}{6}$$

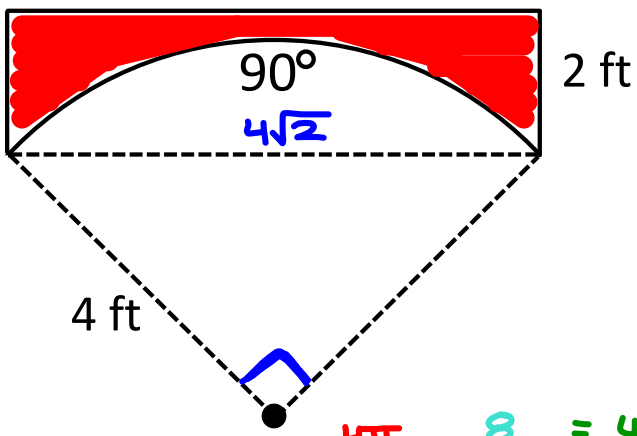
$$\frac{1}{2}b = 6\sin 40^\circ$$

$$A_\Delta = 6\cos 40^\circ \cdot 6\sin 40^\circ$$

$$= 36\cos 40^\circ \cdot \sin 40^\circ$$

Final: $\boxed{8\pi - 36\cos 40^\circ \cdot \sin 40^\circ \ u^2}$

$\approx 7.406 \ u^2$



$A_{shaded} = A_{rect} - A_{seg}$

$8\sqrt{2}$ $(4\pi - 8)$

$\boxed{= 8\sqrt{2} - 4\pi + 8}$ $\boxed{ft^2}$

$A_{rect} = l \cdot w$

$= l \cdot 2$

$= 4\sqrt{2} \cdot 2 = 8\sqrt{2}$

4π 8 $= 4\pi - 8$

$A_{segment} = A_{sector} - A_{\Delta}$

$\frac{x}{\pi 4^2} = \frac{90°}{360°}$

$\frac{x}{16\pi} = \frac{1}{4}$

$4x = 16\pi$

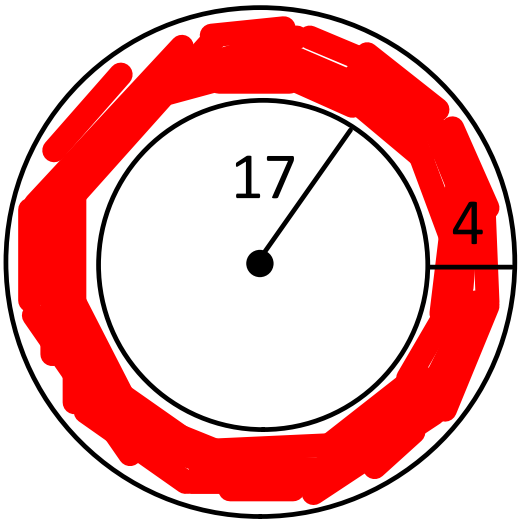
$x = 4\pi$

$A_{\Delta} = \frac{1}{2} b \cdot h$

$= \frac{1}{2}(4)(4)$

$= 8$

Find the area of the shaded region



$A_{shaded} = A_{outer\,\odot} - A_{inner\,\odot}$

$A_{outer\,\odot} = \pi 21^2$

$= 441\pi$

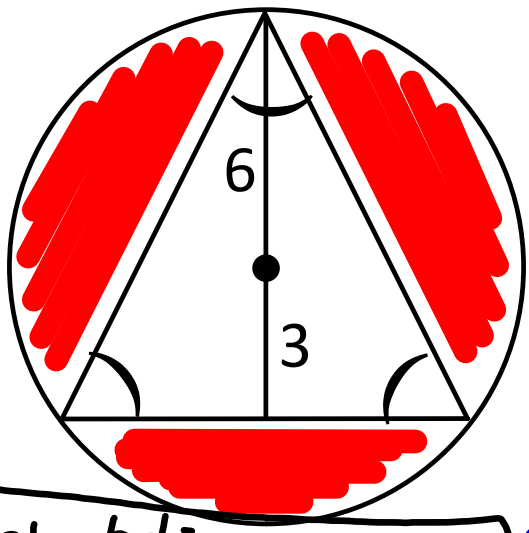
$A_{inner\,\odot} = \pi 17^2$

$= 289\pi$

$A_{shaded} = 441\pi - 289\pi$

$\boxed{= 152\pi \ u^2}$

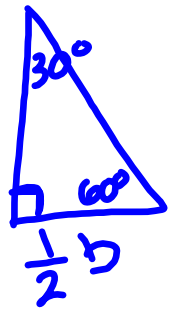
Find the area of the shaded region



$A_{shaded} = A_{\odot} - A_{\triangle}$

$A_{\odot} = \pi 6^2$
$= 36\pi$

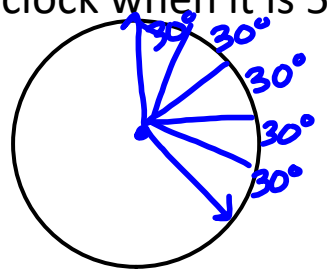
$A_{\triangle} = \frac{1}{2} b \cdot h = 3\sqrt{3} \cdot 9$
$= 27\sqrt{3}$



$LL = SL\sqrt{3}$
$9 = SL\sqrt{3}$
$SL = \frac{9}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = 3\sqrt{3}$

$\boxed{A_{shaded} = 36\pi - 27\sqrt{3} \ u^2}$

The minute-hand of a clock is 3 inches long.
Find the area of the sector made by the hands of the clock when it is 5:00.



$\frac{360°}{12} = 30°$

$5 \cdot 30° = 150°$

$\frac{x}{\pi 3^2} = \frac{150°}{360°}$

$\frac{x}{9\pi} = \frac{5}{12}$

$12x = 45\pi$

$\boxed{x = \frac{15\pi}{4} \ in^2}$