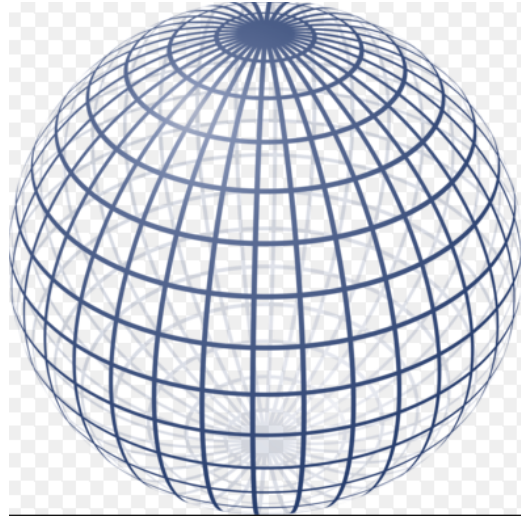


Lune Area

1. Draw a double lune on the sphere provided with angle 90° , $\frac{\pi}{2}$, or $\frac{\pi}{4}$ radians.



2. Recall that the total surface area of a sphere with radius one is 4π . Find the area of the double lune that you drew.

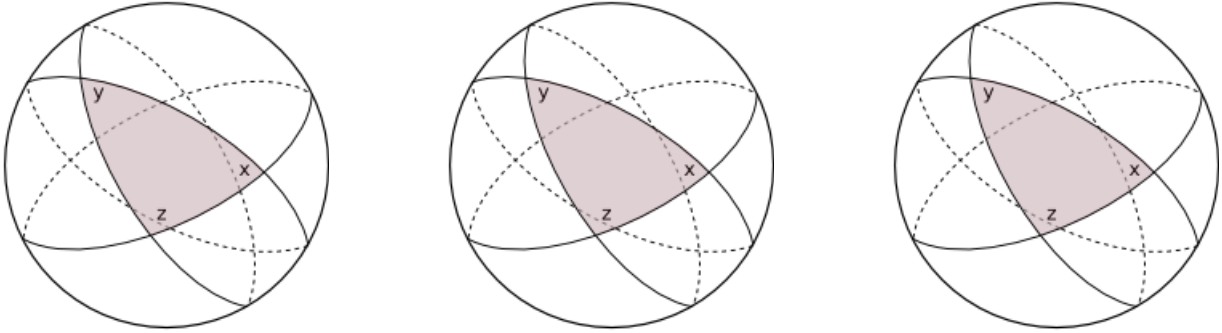
3. Find the area of the double lune with angle $\frac{\pi}{n}$ or $\frac{\pi}{2n}$ radians.

4. Find the area of the double lune with angle 120° , $\frac{2\pi}{3}$, or $\frac{2\pi}{6}$ radians.

5. Find the area of the double lune with angle $\frac{m\pi}{n}$.

6. Is your answer above consistent with the text, “the area of a double lune with angle α is 4α ”?

Triangle Area



1. Shade the double lune with angle x , y , and z , respectively, on each sphere above.
2. Let A_x be the area from the double lune with angle x . Similarly define A_y and A_z . Find the values for A_x , A_y , and A_z .
3. Consider the union of A_x , A_y , and A_z . That is, the areas covered by A_x , A_y , and A_z .
 - (a) Have we counted all the area on the sphere?
 - (b) Have we counted any area on the sphere more than once?