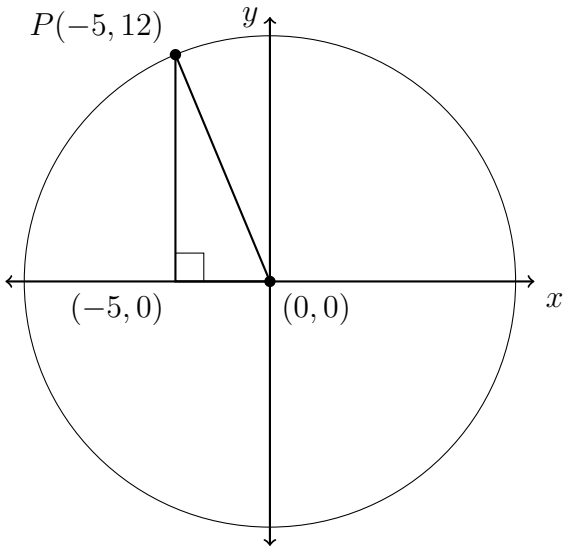
8.6 Do Now: 3-D rotations & cross sections

1. The point $P(-5, 12)$ is on a circle centered at the origin, as shown below.

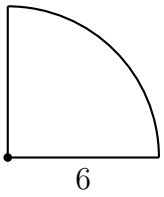
   (a) Find the radius of the circle.

   (b) Write down the equation of the cirle using the form $(x-a)^2+(y-b)^2 = r^2$.



2. What is the equation of a circle with center $(-3, 7)$ and radius $r = 4$?

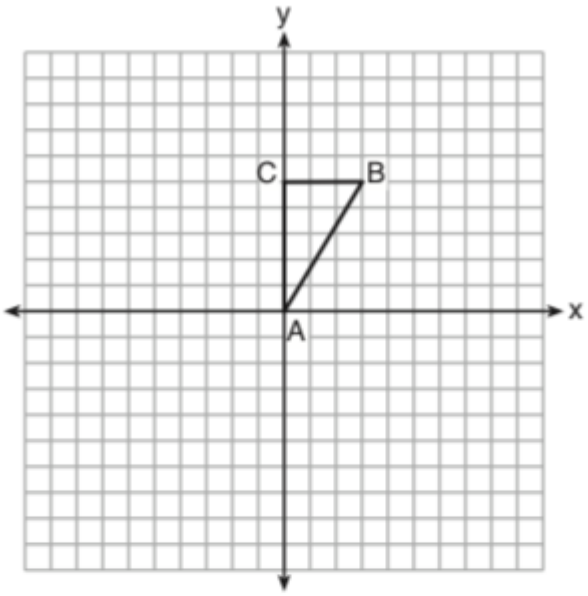
3. Find the area of a quarter circle with radius of 6 centimeters, expressed in terms of π.



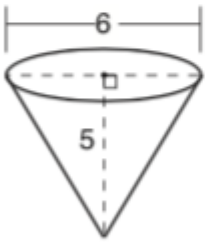
4. A large weather balloon in the shape of a sphere has a radius of 8 meters. Helium filling the balloon has a buoyancy versus air of 1.11 kilograms per cubic meter. Find the lifting power of the balloon.

3-D Rotations & Cross sections of solids

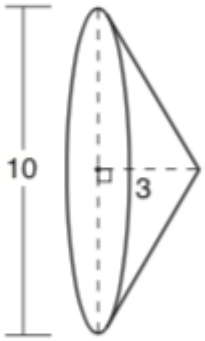
Triangle ABC, with vertices at $A(0,0)$, $B(3,5)$, and $C(0,5)$, is graphed on the set of axes shown below.



Which figure is formed when $\triangle ABC$ is rotated continuously about $\overline{BC}$?

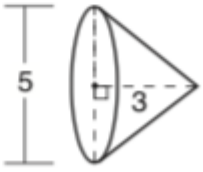


(1)



(3)

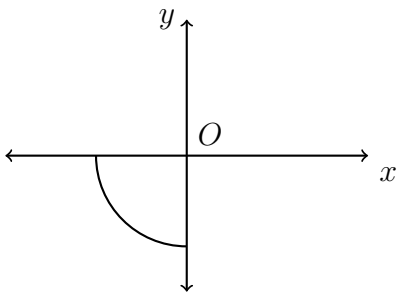
(2)



(4)

5.

6. Circle O is centered at the origin. In the diagram below, a quarter of circle O is graphed.

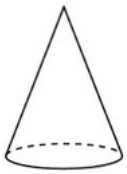


Which three-dimensional figure is generated when the quarter circle is continuously rotated about the y-axis?

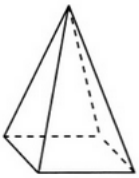
(a) cone
(b) sphere
(c) cylinder
(d) hemisphere

7. A student has a rectangular postcard that he folds in half lengthwise. Next, he rotates it continuously about the folded edge. Which three dimensional object below is generated by this rotation?

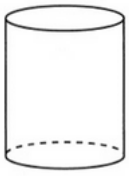
(a) cone



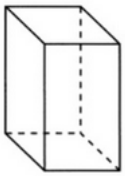
(b) pyramid



(c) cylinder

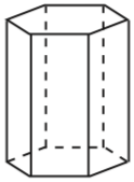


(d) rectangular prism



Cross sections of solids

8. A right hexagonal prism is shown below. A two-dimensional cross section that is perpendicular to the base is taken from the prism.



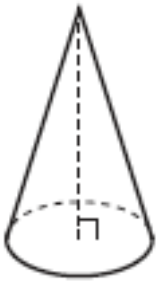
Which figure describes the two-dimensional cross section?

(a) rectangle
(b) triangle
(c) pentagon
(d) hexagon

9. A right cylinder is cut perpendicular to its base. The shape of the cross section is a

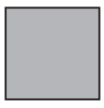
(a) circle
(b) cylinder
(c) rectangle
(d) triangular prism

10. William is drawing pictures of cross sections of the right circular cone below.



Which drawing can *not* be a cross section of a cone?

(a) square



(b) triangle

(c) parabola

(d) ellipse