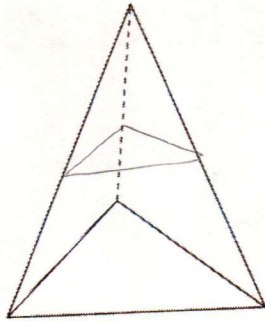


Unit 5a Review

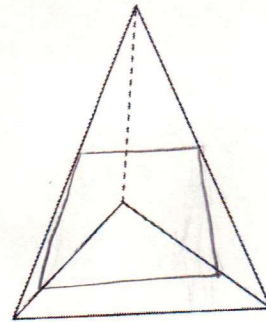
1. Using the given geometry solid, what shape is created when it is intersected by a plane:
Draw the plane on the solid and the resulting shape next to and describe each answer, be specific.

a. By a horizontal plane?



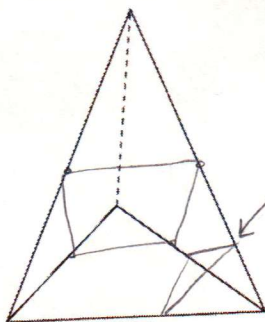
It would make a triangle similar to the base.

b. By a vertical plane?



vertical - removing a vertex would make a triangle
vertical - removing most of a face would make a trapezoid.

c. By a diagonal plane?



A diagonal plane could make

- triangle
- square
- rectangle
- trapezoid

} depends on where on the edges you put the plane.

Volume Formulas

Prism or Cylinder: $V = \text{Base} \cdot \text{Height}$

Cone or Pyramid: $V = \frac{1}{3} \text{Base} \cdot \text{Height}$

Sphere: $V = \frac{4}{3} \pi r^3$

Cone
Frustrum: $V = \frac{1}{3} \pi \cdot \text{Height}(R^2 + Rr + r^2)$

Area Formulas

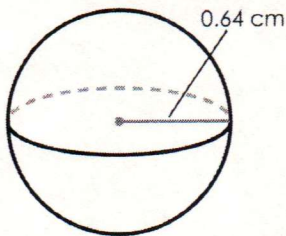
Rectangle: $A = LW$

Triangle: $A = \frac{1}{2} \text{Base} \cdot \text{Height}$

Circle: $A = \pi r^2$

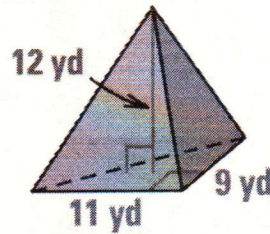
2. Find the volume of the following geometric solids.

a.



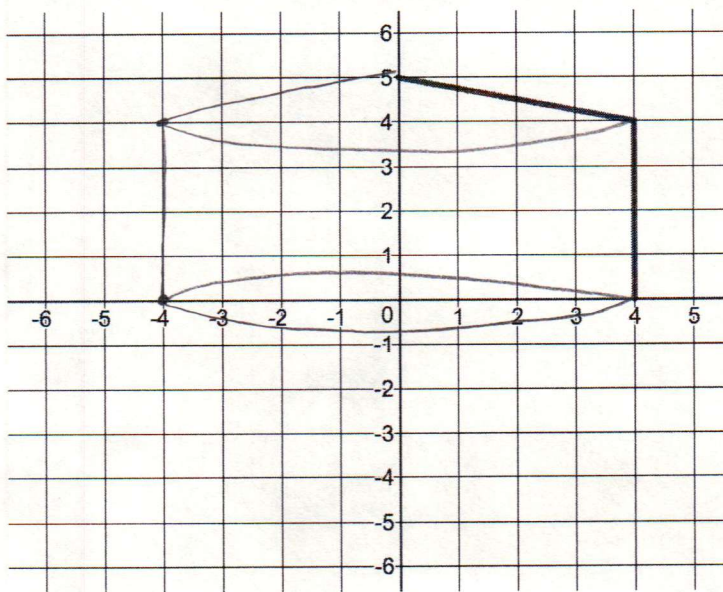
$$V = \frac{4}{3}\pi (.64)^3 \approx \boxed{1.098 \text{ cm}^3}$$

b.



$$V = \frac{1}{3} \left(\frac{1}{2} (11)(9) \right) (12) = \boxed{198 \text{ yd}^3}$$

3. If you complete one revolution around the y-axis, sketch the resulting shape. Then calculate the volume of the geometric solid that was created. Show all work.



cylinder $r=4$ $h=4$

$$V = \pi (4)^2 (4)$$

$$V \approx 201.06 \text{ units}^3$$

Cone $r=4$ $h=1$

$$V = \frac{1}{3} (\pi (4)^2) (1)$$

$$V \approx 16.76 \text{ units}^3$$

$$201.06 + 16.76 \approx$$

$$\boxed{217.82 \text{ units}^3}$$

4. A grain silo on a farm has the same shape as the shape you made in #3. Given these dimensions, determine the volume of the grain silo.

Height in the center: 63 feet
 Height on the outside: 51 feet
 Diameter: 24 feet

cylinder

$$r=12 \quad h=51$$

$$V = \pi (12)^2 (51)$$

$$V \approx 23071.86$$

Cone

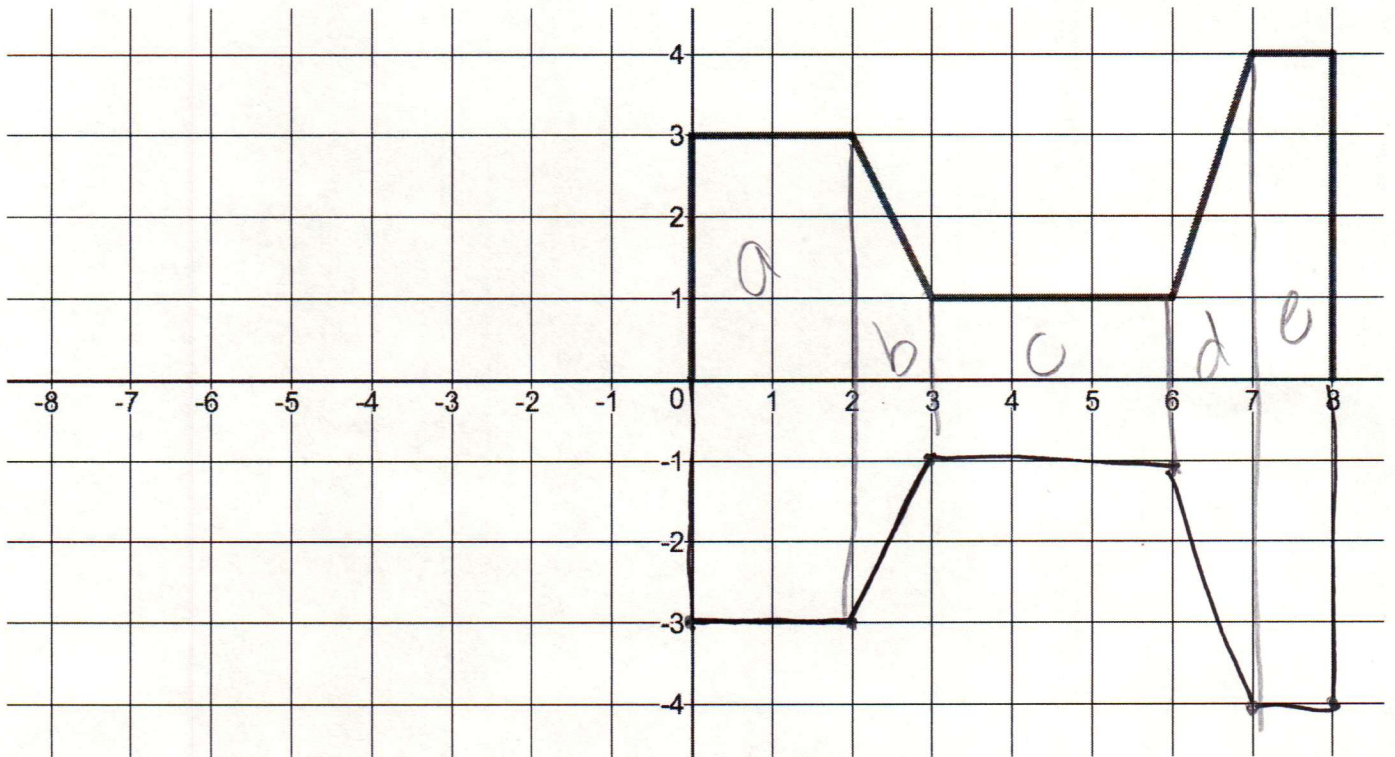
$$r=12 \quad h=12$$

$$V = \frac{1}{3} (\pi (12)^2) (12)$$

$$V \approx 1809.56$$

$$V \approx 23071.86 + 1809.56 \approx \boxed{24,881.42 \text{ feet}^3}$$

5. If you complete one revolution around the x-axis, sketch the resulting shape. Then calculate the volume of the geometric solid that was created. Show all work.



a: cylinder $V = (\pi(3)^2)(2) \approx 56.55$

b: frustum $V = \frac{1}{3}\pi(1)(3^2 + (3)(1) + 1^2) \approx 13.61$

c: cylinder $V = (\pi(1)^2)(3) \approx 9.42$

d: frustum $V = \frac{1}{3}\pi(1)(1^2 + (1)(4) + 4^2) \approx 21.99$

e: cylinder $V = (\pi(4)^2)(1) \approx 50.27$

$a + b + c + d + e = \boxed{151.84 \text{ units}^3}$