NAME_____**DATE**_____**PER.**_____

FUNCTION APPLICATIONS WITH CYLINDERS

Draw sketches as necessary, <u>show all work</u>, and <u>simplify answers</u>.

1. A cylindrical tank has a height of 18 ft and a radius of 6 ft. Water is poured into the tank at a constant rate. After 3 mins, the height of the water in the tank is 2 ft.

_____	a) What is the volume of the water in the tank after 3 minutes?
_____	b) What is the rate at which water is poured into the tank?
_____	c) Express the volume of the water in the tank as a function of the height, h.
_____	d) What is the height of the water after 5 more minutes?
_____	e) What is the volume of the water if the height is 12 feet?

2. A cylindrical tank full of water has a height of 40 meters and a diameter of 40 meters. Water is draining from the tank at a rate of 250 m^3/min.

a) Sketch a picture of the problem.

_____	b) Find the volume when the tank is full.
_____	c) Express the volume of the water in the tank as a function of its height, h.
_____	d) Find the volume of the water when the height is 15 meters.
_____	e) How long will it take for the tank to drain completely?

3. A cylindrical can has a volume of 900π cm^3.

_____	a) Find the height of the cylinder in terms of the radius.
_____	b) Express the surface area of the can as a function of the radius, r.
_____	c) Find the surface area of the cylinder when the radius is 15 cm.

4. If the volume of a right cylinder is 800π cubic units, write an expression for its lateral surface area as a function of its radius.