**P269**

1. Solution: Let *x* be the radius of the bottom side of the cone, *y* be the height of the center of the sphere to the bottom side, then



and the volume of the cone is



Since



Then let , we get .

Since when , , when ,

, then  is increasing on , decreasing on . Therefore,  attains its absolute maximum at , and the maximum volume is

.

15. Solution: a. Let *x* be the length of the sides of the squares, the length of the base is , the width is , then the volume of the box is

b. The domain of is .

Since

Since when , , when ,

, then  is increasing on , decreasing on . Therefore,  attains its absolute maximum at , and the maximum volume is

.

When the length of the sides of the squares is  inches, the box with a lid has maximum volume  cubic inches.

P286:

1. Solution:
2. Solution:

P343:

17. Solution:

18. Solution:

