

**Exam #3**  
**Section 7.1, 7.2**

1. Find the domains of the following functions:

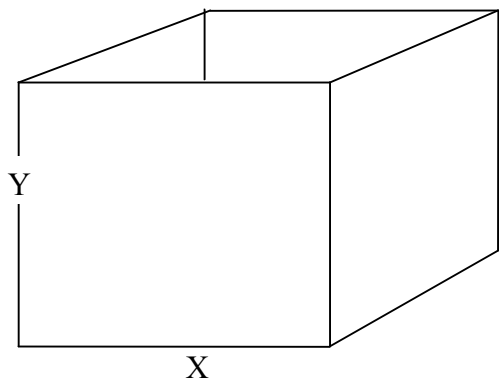
a.  $g(x,y) = \frac{\sqrt{x-y}}{\ln y}$

b.  $h(x,y,z) = \frac{\sqrt{x} \ln y}{z}$

2. Evaluate the given function at the given point:

a.  $g(x,y) = \ln(x^3 - y^3)$  at  $(e, 0)$

b.  $h(x,y,z) = z\sqrt{x} \ln y$  at  $(4, e, -1)$



3. a. Find a function  $V(x,y)$  to define the volume of the open-top box shown.  
 b. Find a function  $S(x,y)$  to define the surface area of the open-top box shown.

4. a. Calculate all of the second-order partial derivatives for  $f(x,y) = y \ln x + x e^y$ .

- b. Calculate the second-order partial derivatives for  
 $f(x,y) = x^4 y^3 - e^{2x}$ .