8th lesson

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Theory

Exercises

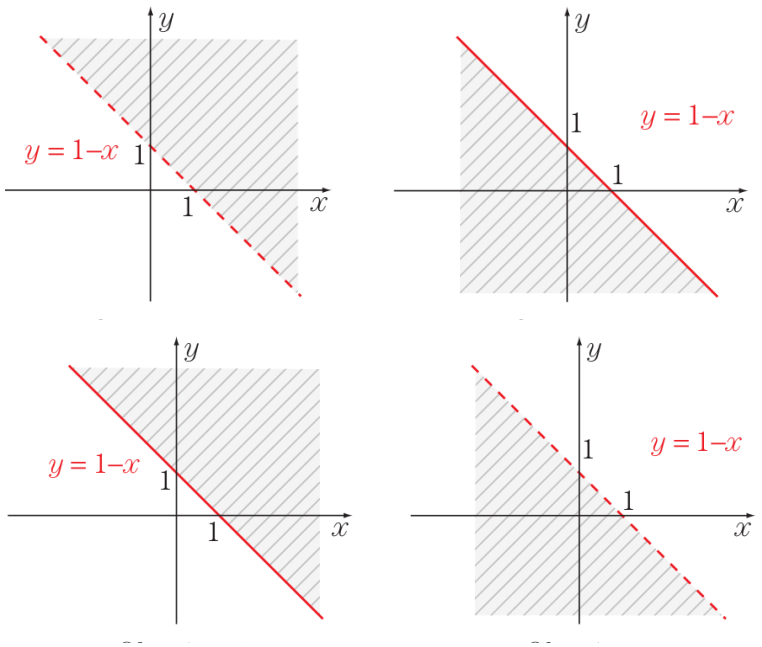
1. Find and sketch the domain:

   (a) $f(x,y) = \sqrt{x+y}$
   (b) $f(x,y) = \sqrt{x} + \sqrt{y}$
   (c) $f(x,y) = \ln(xy)$
   (d) $f(x,y) = 1 + \arcsin(x+y)$
   (e) $f(x,y) = \frac{1}{x^2-y^2+1} + \ln(e-y-x^2)$
   (f) $f(x,y) = 2 - \sqrt{4-x^2-y^2}$
   (g) $f(x,y) = \sqrt{1-2x^2-y^2}$
   (h) $f(x,y) = \sqrt{2x^2+y^2+1}$
   (i) $f(x,y) = \sqrt{2x^2+y^2-4}$
   (j) $f(x,y) = \sqrt{x^2-y^2+1}$
   (k) $f(x,y) = \sqrt{1-xy}$

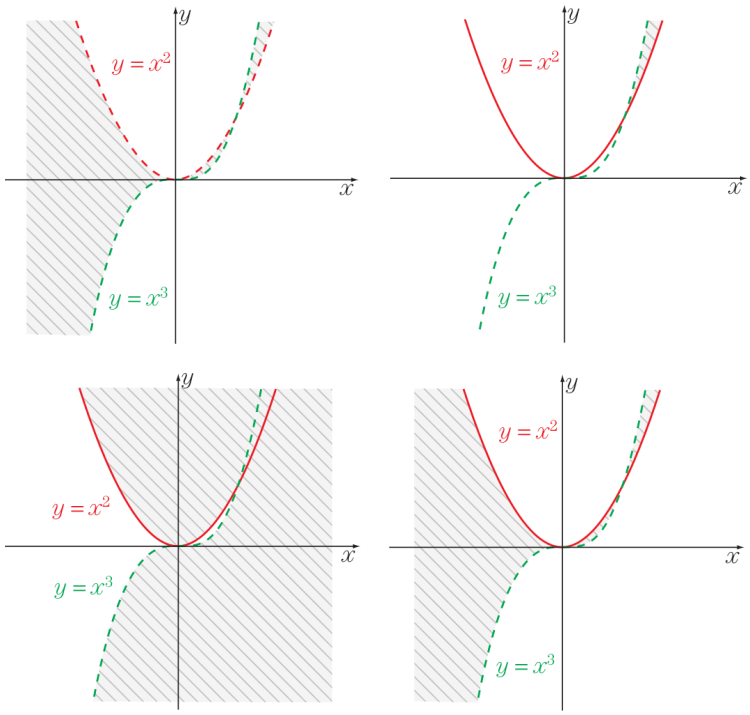
   The following exercise is by http://homel.vsb.cz/~kre40/esfmat2/kapitoly/kapitola_4_1.pdf

2. Find the domain

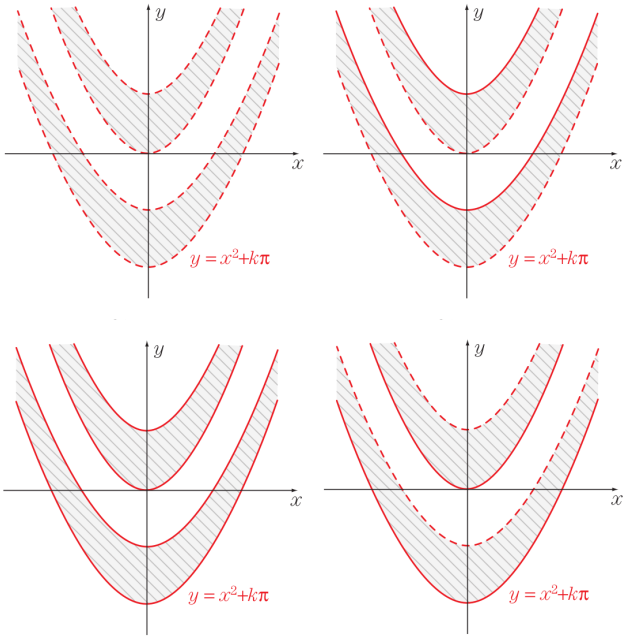
   (a) $f(x,y) = \sqrt{\ln(x+y)}$



(b) $f(x,y) = \sqrt{\frac{y-x^2}{x^3-y}}$

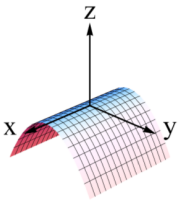


(c) $f(x,y) = \sqrt{\sin(y-x^2)}$

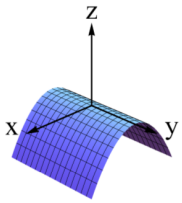


3. Find the graph of function $z = -y^2$:

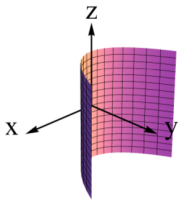
A.



B.



C.



Source 1: http://www.cpp.edu/∼conceptests/question-library/mat214.shtml

4. Which of the following objects can NOT be a graph of two variable function:
   (a) plane (board);
   (b) cylinder without base (pipe);
   (c) sphere (orange peel);
   (d) paraboloid (Davis cup);
   (e) line.