

Problem Set 10

1. Let $g(x,y) = \cos(x + 2y)$.

(a) Evaluate $g(2, -1)$.

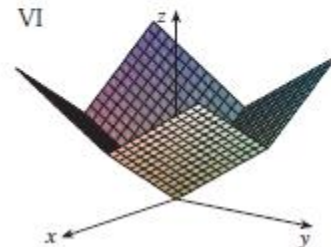
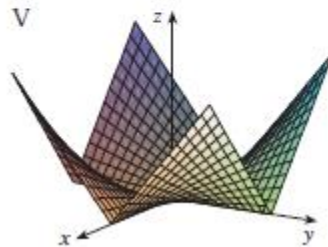
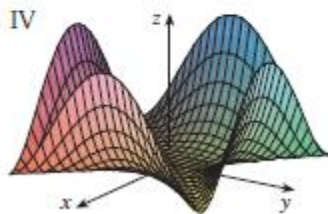
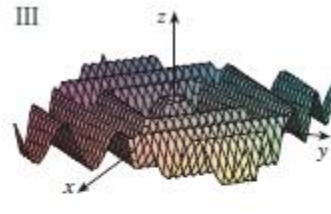
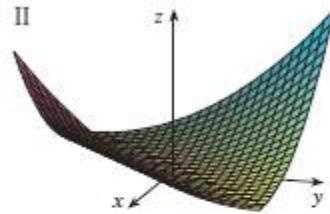
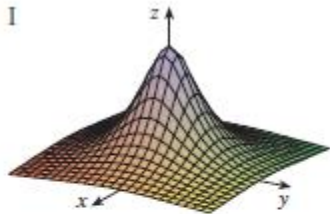
(b) Find the domain of g .

(c) Find the range of g .

2. Find and sketch the domain of the function, $f(x,y) = \sqrt{xy}$.

3. Sketch the graph of the function $f(x,y) = 10 - 4x - 5y$.

4. Match the function $f(x,y) = \frac{1}{1+x^2+y^2}$ with one of the graphs below:

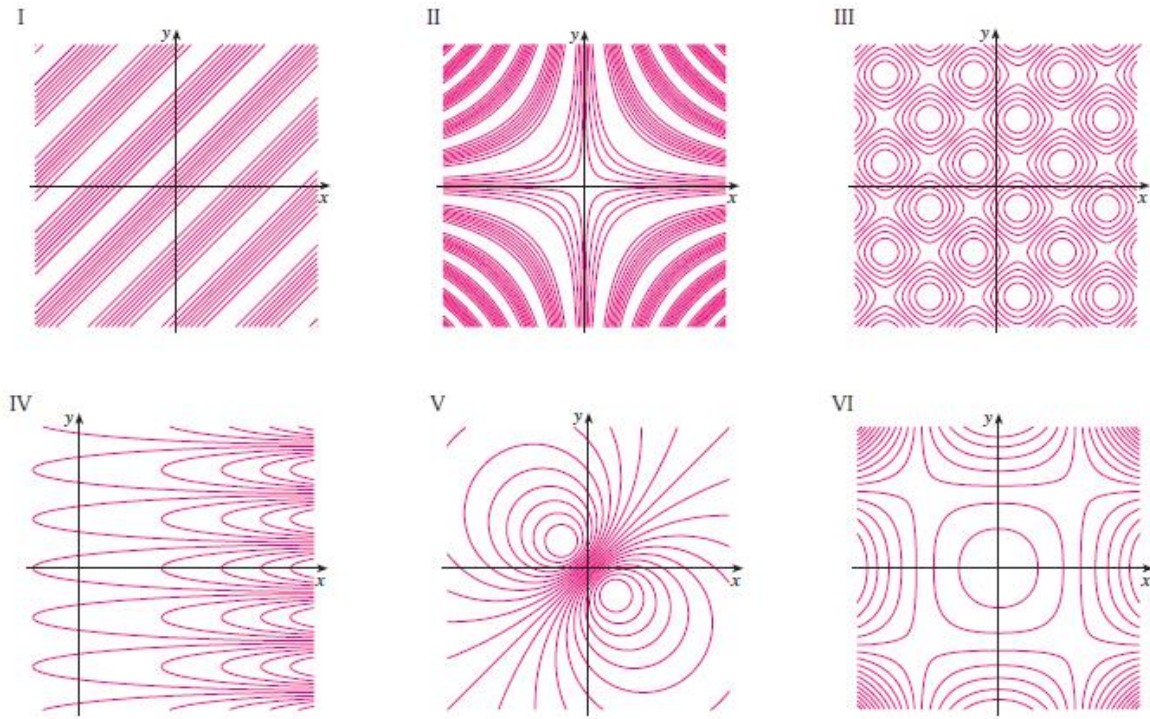
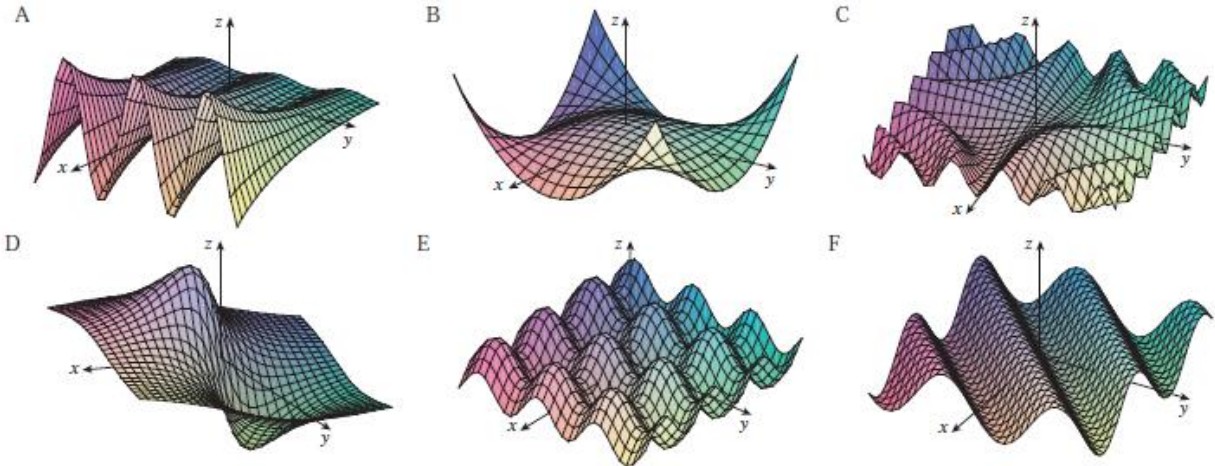


5. Draw a contour map of the function $f(x,y) = (y - 2x)^2$ showing several level curves.

6. Sketch a contour map and a graph of the function $f(x,y) = x^2 + 9y^2$.

7. A thin metal plate, located in the x - y plane, has temperature $T(x,y) = \frac{100}{1+x^2+2y^2}$. Sketch four isothermal level curves.

8. Match the function $z = \sin(xy)$ to one of the graphs and to one of the contour maps.



9. Describe the level surfaces of the function $f(x,y,z) = x + 3y + 5z$

10. Describe how the graph of g is obtained from the graph of f , given $g(x,y) = 2 - f(x,y)$.