# Worksheet 12.3: Contour Diagrams

1. Draw the graphs and contour diagrams for $z = x^2 + y^2$ and $z = 1 - x - y$. Choose a point on each level set and determine a path from that point

   Choose a point on each level set and determine a path from that point
   (a) on which the altitude of the surface (value of the function) remains constant.
   (b) on which the altitude increases most quickly.

2. Consider the contour diagram for $z = y - \sin x$ given below.
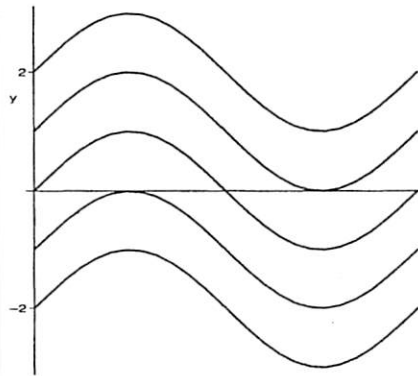
   (a) Label each curve in the diagram with its appropriate function value.
   (b) If you walk along the line $x = \frac{\pi}{2}$ in the positive y direction, are you going up or down? Are you on a ridge or in a valley?

   (c) If you walk along the line $x = \frac{3\pi}{2}$ in the positive y direction, are you going up or down? Are you on a ridge or in a valley?