MathSoft Design 2013
Exercise 1

1. Write matlab functions

   (a) * Draw a circle for a given radius and return its area.

   (b) * Draw an ellipse for given semimajor-axis and semiminor-axis lengths and return its area.

   (c) * Swap contents of two inputs.

   (d) * Return one if a given integer is odd and zero otherwise.

2. Write a matlab function to draw a circle or an ellipse. The matlab draws a circle as described in 1.a, if there is provided only one input, and draws an ellipse as described in 1.b if there are provided two inputs.

3. * Write a matlab function to implement f and plot it for $x \in [-1, 1]$,

$$\begin{aligned} f(x) &= x \text{ if } x \geq 1, \\ &= -x \text{ if } x \leq -1, \\ &= 0 \text{ if } -1 < x < 1. \end{aligned}$$

4. Plot 500 uniform points within $[0\ 1] \times [0\ 1]$.

5. Plot 500 uniform points within $[-1\ 1] \times [-1\ 1]$.

6. * Plot 500 uniform points within a unit circle centered at $(0, 0)$.