1. \( f(x) = e^{-x} + \frac{x^4}{2} - 10x \)

Using Binary Search, estimate \( x^* \) and \( f(x^*) \)

- \( x_0 = 0 \) \( \Delta x = 0.5 \)
- Stop after \( \Delta x = 0.125 \) (don’t do the iteration where \( \Delta x = 0.0625 \))
- Note: \( 1.5 < x^* < 2 \)

2. Find minimum of function above using parabolic approximation

- \( x_0 = 1 \) \( \Delta x = 0.5 \)
- Stop after two iterations
- Use \( \Delta x = 0.5 \) for both iterations

3. \( f(x, y) = x^2 + y^2 - 5x \)

Estimate the minimum of this function using marching grid

- \( x_0 = y_0 = 0 \) \( \Delta x = \Delta y = 1.5 \)
- Complete four iterations

- \( x^* = 2.5 \) \( y^* = 0 \) \( \Rightarrow \) You won’t get exactly these values
4. Given the function \( f(x) = x^4 - 100x^2 + 50x \)

Identify the local and global minima on the plot below.

(Just draw arrows, don't calculate values.)