1. (10 points) Let \( h(x) = 2x^2 - 6 \). What is the average rate of change from \( x = 1 \) to \( x = 3 \)? What is the equation of the secant line containing \((1, h(1))\) and \((3, h(3))\)?

Recall that the average rate of change from \( x = 1 \) to \( x = 3 \) is just the slope of the line that contains \((1, h(1))\) and \((3, h(3))\). This means we need to find \( h(1) \) and \( h(3) \).

\[
h(1) = 2(1)^2 - 6 = -4 \quad \text{and} \quad h(3) = 2(3)^2 - 6 = 12.
\]

Now we use the slope formula \( \frac{y_2 - y_1}{x_2 - x_1} \) using the points \((1, -4)\) and \((3, 12)\) to get the slope, thus

\[
\text{Average Rate of Change} = \frac{12 - (-4)}{3 - 1} = \frac{16}{2} = 8.
\]

Now, 8 is the slope of the secant line containing \((1, h(1))\) and \((3, h(3))\) so we use the point slope formula with either point and get the equation of the secant line as:

\[
y - (-4) = 8(x - 1) \Rightarrow y = 8x - 12.
\]

2. (10 points) Answer the following questions about the graph shown.

(a) What are the x-intercepts? \(-1.5, 0, 1.5\)

(b) What are the y-intercepts? \(0\)

(c) Is the function even, odd or neither, why? The function is odd because it is symmetric with respect to the origin.

(d) Is there a local minimum when \( x = -2 \), if so what is it? No, the open dot at \((-2, -1)\) tells us we don’t have a local minimum there.

(e) Is there a local maximum when \( x = -1 \), if so what is it? Yes, the local maximum is 1.

(f) What is the domain? \((-2, 2)\)

(g) What is the range? \([-1, 1]\)

3. (Bonus +2) What is my office number and what are my office hours?
   My office is 403 Carver and my office hours are MW 10:00-10:50 and 1:10-2:00.