Note. No assignment shall be received later.

Comment for the student. The purpose of the assignment is for you to practice how to write mathematics and no so much on the content of the course. Write the assignment as if you were explaining it for one of your schoolmates. Correctness of ideas and explanations are going to receive more marks than the actual result itself. Use lay language (or common use language) and do not make an essay out of this. An assignment where no explanation is provided of what is going on shall receive a mark of zero, even if you draw, wrote formulae or equations that make sense.

Exercise (4.1) Sketch by hand the graph of \( x \mapsto \frac{(x + 2)^2}{x^2 + 1} \).

The exercise will have the following grading scheme:

1. 0 marks if you do not provide a clean graph by hand with appropriate labels where corresponding (mark the minimisers, maximisers, minima, maxima, inflection points, intercepts and draw dashed lines for any asymptotes).

2. The following break-down down of points.

   (a) Finding first derivative 2pts.
   (b) Finding intervals of convexity and concavity 2pt.
   (c) Finding possible point for local maximisation and minimisation 1pt.
   (d) Showing which points are local maximisers and local minimisers (use first or second derivative test, your pick) 3pts.
   (e) Finding asymptotes 1pt.
   (f) Finding intercepts 1pt.