(1) Warm-up: with your group members, verbally define the terms: function, domain, range, vertical line test, even/odd function.

(2) Sketch:
   (a) a curve that is not the graph of a function.
   (b) Sketch the graph of a function with domain \([0, 1]\) and range \([1, 2]\).
   (c) Sketch the graph of a function with domain \([1, 2)\) and range \((-\infty, 0]\).
   (d) Sketch the graph of a function with domain \((0, \infty)\) and range \((0, 1]\).

(3) Critique the following argument:
Since \(x^2 - 2x + 1 = (x - 1)^2\), the functions
\[
f(x) = \frac{x^2 - 2x + 1}{x - 1}
\]
and
\[
g(x) = x - 1
\]
are the same function.

(4) State the domains of the following functions:
   (a) \(\sqrt{x + 2}\)
   (b) \(\frac{x}{|x|}\)
   (c) \(\sqrt{x + 1} + \sqrt{16 - x^2}\)
   (d) \(\frac{\sqrt{x^2 - 2}}{x + 8}\)

(5) Consider the curve \(y^2 = x - 1\).
   (a) Show algebraically that there is no function \(f(x)\) so that the graph \(y = f(x)\) is the curve.
   (b) Sketch a graph of this curve and use the vertical line test to confirm that no such function \(f\) (as mentioned in part a) exists.
(c) Note that the curve comes in two pieces. Are these two pieces the graphs of functions? If so, describe these functions.

(6) Explain why an odd function \( f(x) \) with zero in its domain must satisfy \( f(0) = 0 \).

(7) What special properties must the domains of even or odd functions satisfy? (Hint: if, for instance, 1 is in the domain of \( f \), what can you conclude about \(-1\)?)

(8) For what values of \( m \) and \( b \) is the line \( f(x) = mx + b \) an even function? When is it an odd function? Explain your answers.

(9) Is there a function that is both even and odd? If so, what is it? Is it the only such function? If there isn’t such a function, can you explain why not?