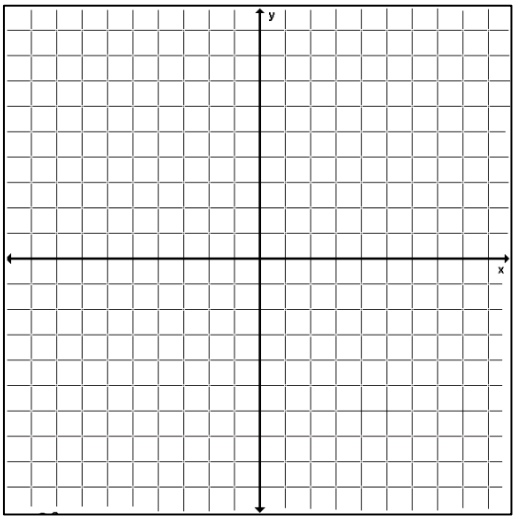
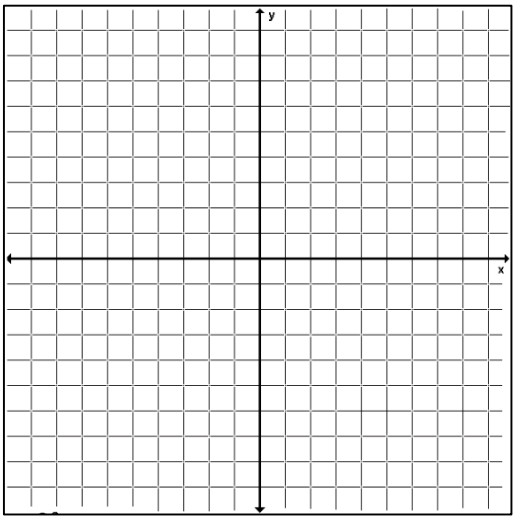
Drawing Graphs of Functions Worksheet

For each question, sketch a possible graph for $f(x)$ based on the given information. Label all zeros, critical points and inflection points. [hint: write out the sign analysis for f' and f'' before drawing the graph.

1. $f(x)$ is continuous and differentiable at all points
   $f(-3) = f(5) = 0$
   $f' > 0$ for $x < -1$ and $x > 4$
   $f' < 0$ for $-1 < x < 4$
   $f'' < 0$ for $x < 0$
   $f'' > 0$ for $x > 0$



2. $f(x)$ is continuous at all points
   $f(1) = 0$
   $f' > 0$ for all *x* except at *x* = 1
   f' is undefined at *x* = 1
   $f'' > 0$ for $x < 1$
   $f'' < 0$ for $x > 1$



3. $f(x)$ is a piece-wise function that is continuous at all points
   $f(-1) = f(5) = 0$
   $f' > 0$ for all $x < 3$ except at $x = -1$
   $f' < 0$ for $x > 3$
   f' is undefined at $x = -1$
   $f' = 0$ at $x = 3$
   $f'' = 0$ for $x < -1$
   $f'' < 0$ for $x > -1$