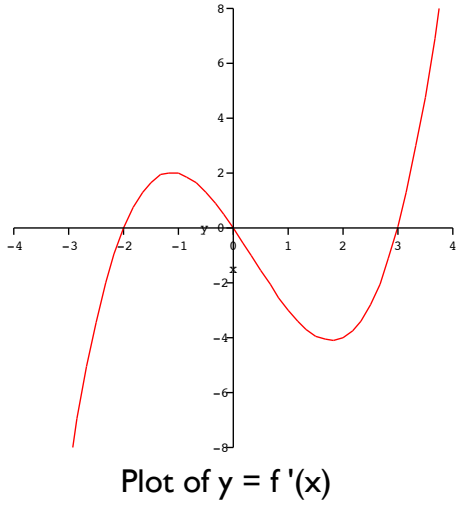
1. The graph of $f'(x)$ shown at the right.
   This is *not* the graph of $f(x)$!



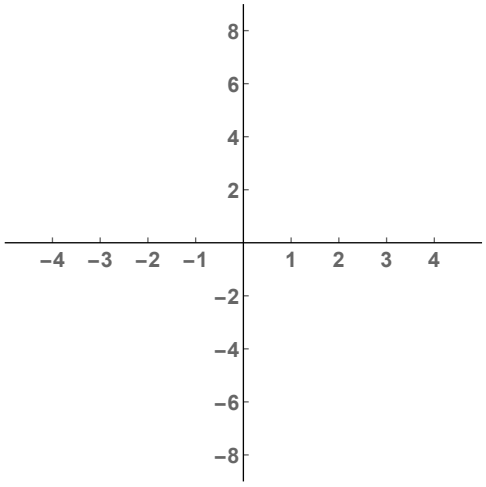
   (a) Where does f have critical points?

   (b) On which intervals is f increasing? decreasing?

   (c) Where does f achieve local maxima? local minima?

   (d) Where is f concave up? concave down?

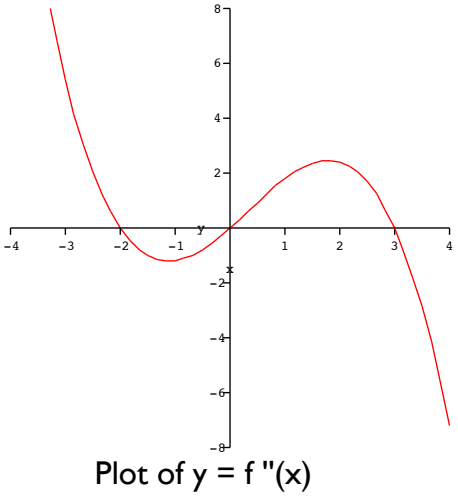
   (e) Where does f have inflection points?



   (f) Suppose that $f(0) = 0$. Sketch a graph of f.

   (g) How does the graph change if $f(0) = 3$?

2. The graph of $f''(x)$ shown at the right. This is *not* the graph of $f(x)$ or $f'(x)$!



Plot of y = f "(x)

(a) Where is f concave up? concave down?

(b) Where does f have inflection points?

(c) Suppose that $f'(-1) = 0$ and $f'(1) = 0$.
If possible, classify $x = -1$ and $x = 1$ as local maxima or local minima of f.

(d) Suppose that $f'(0) = 0$. Is f increasing or decreasing at $x = 1$? at $x = -1$?

(e) Suppose that $f'(-1) = -2$ and $f(-1) = 2$. Could $f(0) = 3$?
Hint: Can you determine if f is increasing or decreasing on $[-1, 0]$?