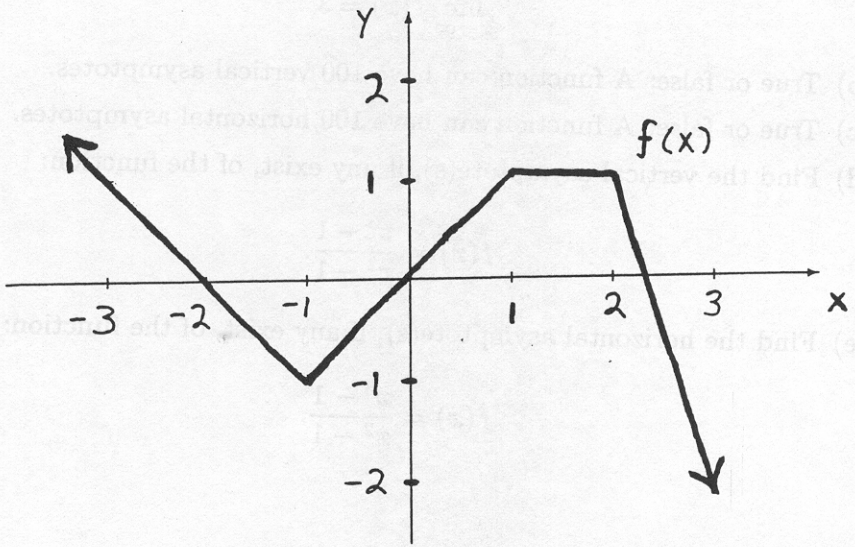
3. Let $F(x)$ be an antiderivative of $f(x)$, that is, $F'(x) = f(x)$. Given the following sketch of $f(x)$:



(a) (8 points) Determine on which intervals $F(x)$ is increasing, decreasing, concave up, and concave down.

(b) (6 points) Assuming that $F(0) = 0$, sketch a graph of $F(x)$.