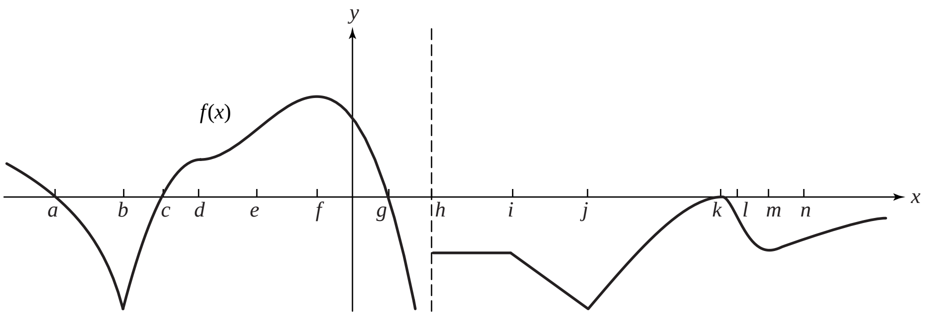
DATE ______________________

4.1 Concepts Worksheet

NAME ______________________

An Unusual Function



1. The function f drawn above would be difficult to describe algebraically; nevertheless, it has interesting geometric features for which calculus provides descriptions. Using the textbook definitions and some freedom of artistic judgment, name the value(s) of x for:

(a) zeros of $f(x)$ ______________________

(b) points of discontinuity of f ______________________

(c) critical points ______________________

(d) intervals over which f increases ______________________

(e) intervals over which f decreases ______________________

(f) relative maxima ______________________

(g) absolute maxima ______________________

(h) relative minima ______________________

(i) absolute minima ______________________

(j) intervals over which f is concave up ______________________

(k) intervals over which f is concave down ______________________

(l) points of inflection ______________________

2. (a) Find the equation of any horizontal asymptotes

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(b) Find the equation of any vertical asymptote(s)

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3. Find the x-coordinate of each point of discontinuity of f'. ____________

4. Find the x-coordinate of each critical point of f'. ____________

5. Sketch f' on the same graph as f. (You will need to approximate the range extent of $f'(x)$ as you graph.)