

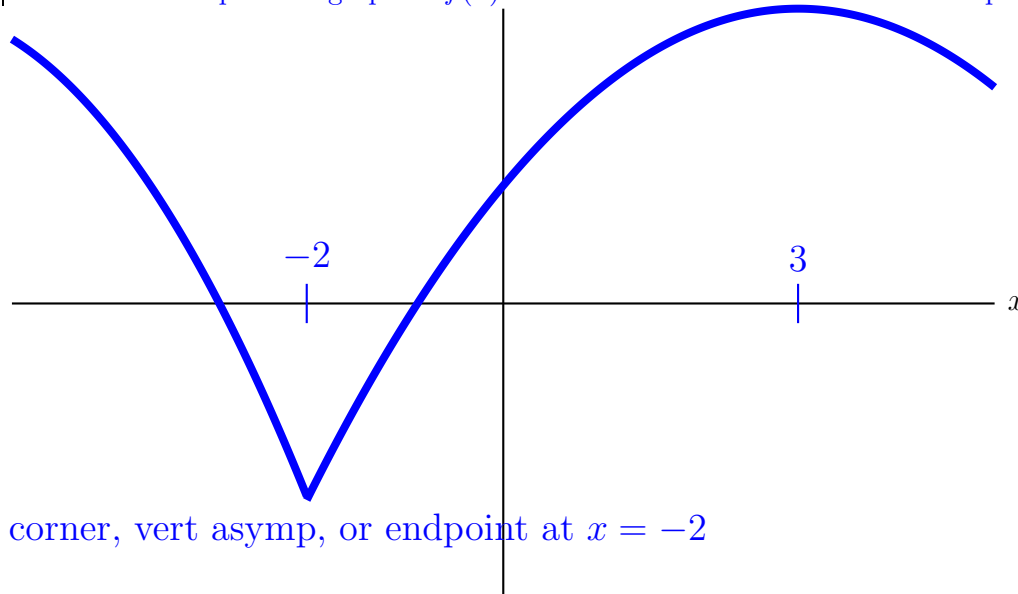
4. [12 points]

The two parts below are independent. Be sure to label any relevant features of your graphs.

a. [6 points] Draw an example of a continuous function $f(x)$ such that

- f has a critical point at $x = -2$ and $f'(-2) \neq 0$, and
- f has a critical point at $x = 3$ and $f'(3) = 0$.

Solution: One possible graph of $f(x)$ is shown below. Answers are not unique.



sharp corner, vert asymp, or endpoint at $x = -2$

b. [6 points] Draw the *derivative* of a function $g(x)$ satisfying

- g is decreasing on the interval $(-\infty, 0)$, and
- $g''(x) > 0$ when $x > 0$.

Solution: One possible graph of $g'(x)$ is shown below. Answers are not unique. [Note that in the graph below, $g(x)$ is decreasing beyond $x = 0$, but that does not contradict the description of g .]

