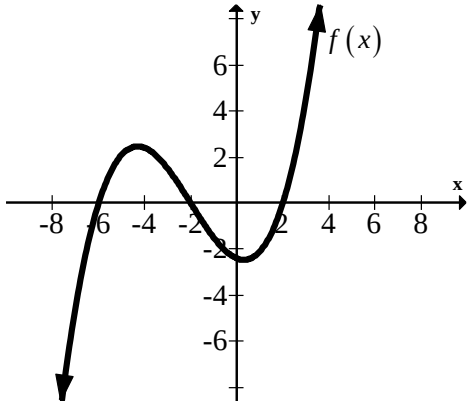
Requirements of Curve Sketching:

Given a function $f(x)$, sketch $f'(x)$, the derivative of $f(x)$.



(1) The graph of $f'(x)$ must be positive on the intervals when $f(x)$ is increasing.

a. The direct relationship between the relative steepness of $f(x)$ and the magnitude of $f'(x)$ should be visible.

(2) The graph of $f'(x)$ must be negative on the intervals when $f(x)$ is decreasing.

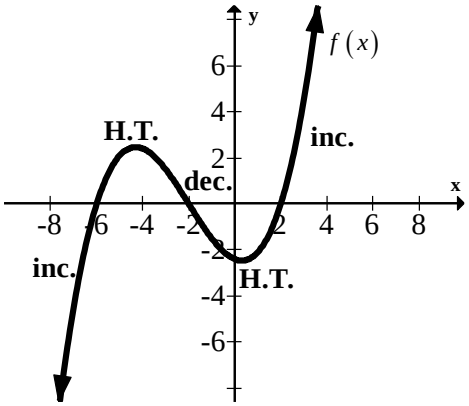
a. The direct relationship between the relative steepness of $f(x)$ and the magnitude of $f'(x)$ should be visible.

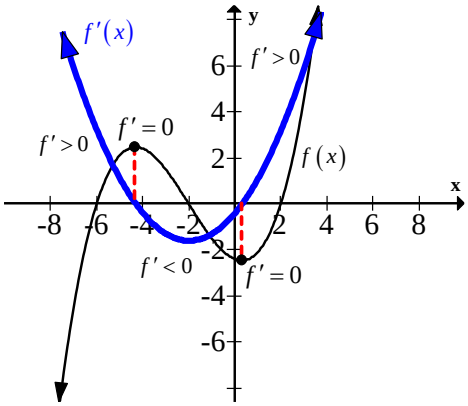
(3) The graph of $f'(x)$ must be zero whenever the graph of $f(x)$ has a horizontal tangent or when the graph of $f(x)$ is constant.

a. The zero of the graph of $f'(x)$ must occur at the same *x*-value at which the horizontal tangent occurs.

(4) The graph of $f'(x)$ must have a hole, jump-discontinuity, or an asymptote when $f'(x)$ does not exist.

a. The discontinuity of the graph of $f'(x)$ must occur at the same *x*-value at which $f(x)$ has a discontinuity or sharp corner.





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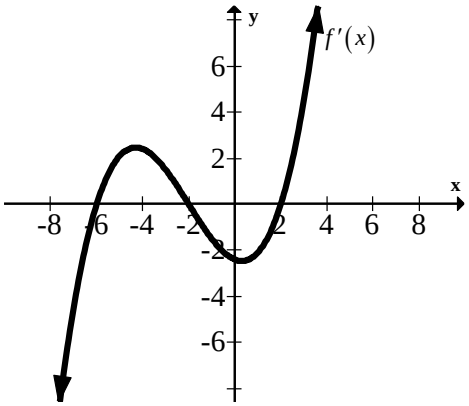

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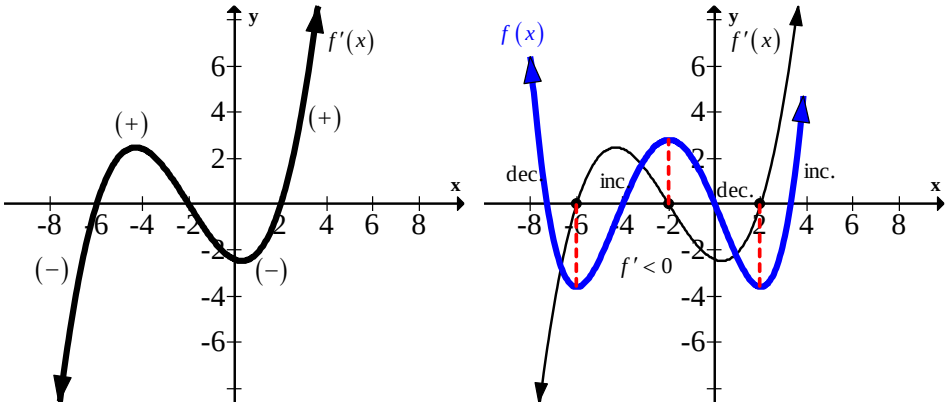

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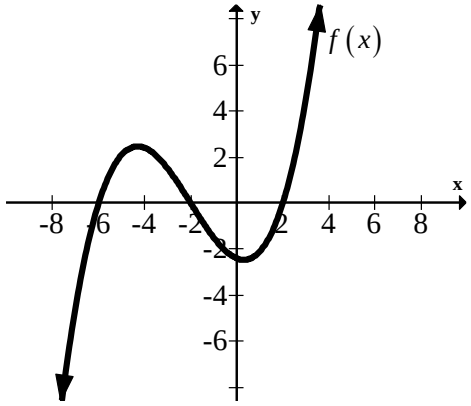

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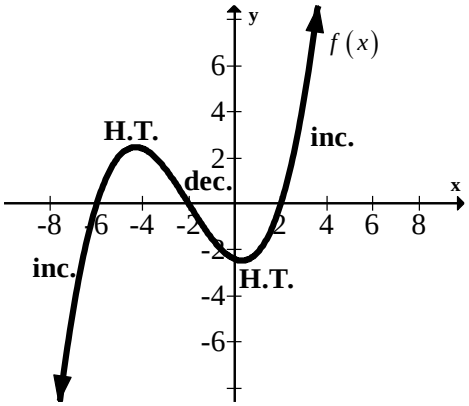

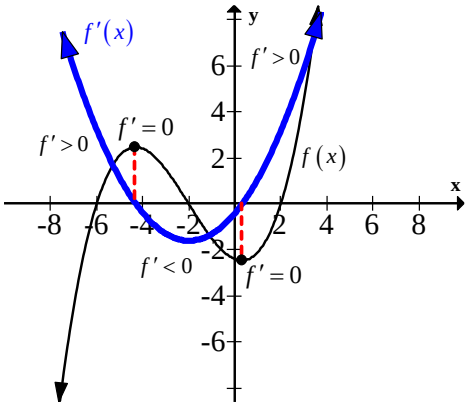

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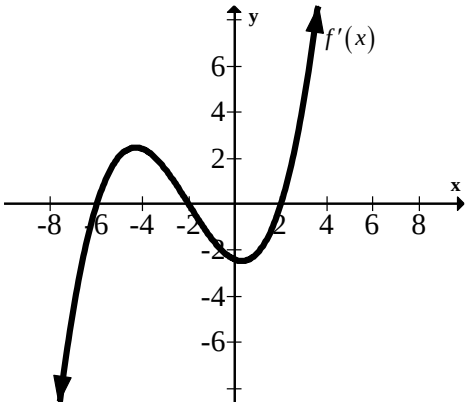

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