

## Graphing $f'(x)$ When Given $f(x)$

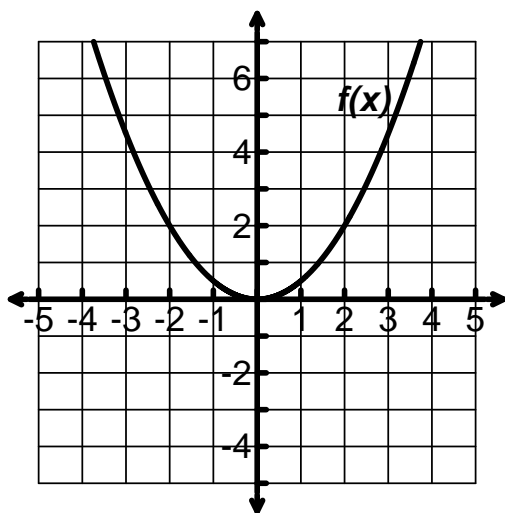
p. 168 - 172 (2.9)

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1. Put dots on the  $x$ -axis where any slopes of  $f(x)$  are zero, which will be the max/min or horizontal tangents on  $f'(x)$ . Now you will be connecting the dots.
  2. Where  $f(x)$  is increasing, draw the  $f'(x)$  above the  $x$ -axis because the slopes are positive.  
Where  $f(x)$  is decreasing, draw the  $f'(x)$  below the  $x$ -axis because the slopes are negative.
  3. If  $f(x)$  has any inflection points that change from concave down to concave up, there will be a minimum on  $f'(x)$  at that  $x$ -value... if  $f(x)$  changes from concave up to concave down, there will be a maximum on  $f'(x)$  at that  $x$ -value.
  4. The degree of any polynomial  $f'(x)$  function decreases by one.
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For 1 - 2, sketch the derivative on the same coordinate plane.

1.



2.

