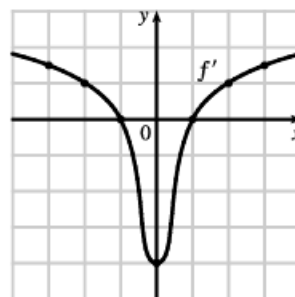


Section 2.8 In Class Problems

1. It appears that f is an odd function, so f' will be an even function—that is, $f'(-a) = f'(a)$.

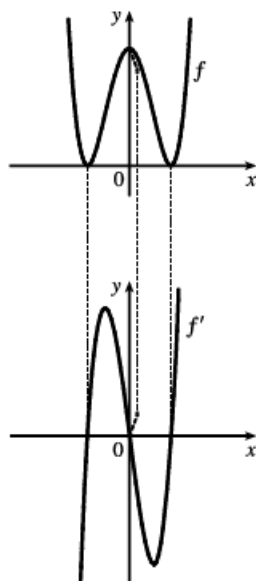
- (a) $f'(-3) \approx 1.5$ (b) $f'(-2) \approx 1$
 (c) $f'(-1) \approx 0$ (d) $f'(0) \approx -4$
 (e) $f'(1) \approx 0$ (f) $f'(2) \approx 1$
 (g) $f'(3) \approx 1.5$



3. (a)' = II, since from left to right, the slopes of the tangents to graph (a) start out negative, become 0, then positive, then 0, then negative again. The actual function values in graph II follow the same pattern.
 (b)' = IV, since from left to right, the slopes of the tangents to graph (b) start out at a fixed positive quantity, then suddenly become negative, then positive again. The discontinuities in graph IV indicate sudden changes in the slopes of the tangents.
 (c)' = I, since the slopes of the tangents to graph (c) are negative for $x < 0$ and positive for $x > 0$, as are the function values of graph I.
 (d)' = III, since from left to right, the slopes of the tangents to graph (d) are positive, then 0, then negative, then 0, then positive, then 0, then negative again, and the function values in graph III follow the same pattern.

Hints for Exercises 4–11: First plot x -intercepts on the graph of f' for any horizontal tangents on the graph of f . Look for any corners on the graph of f —there will be a discontinuity on the graph of f' . On any interval where f has a tangent with positive (or negative) slope, the graph of f' will be positive (or negative). If the graph of the function is linear, the graph of f' will be a horizontal line.

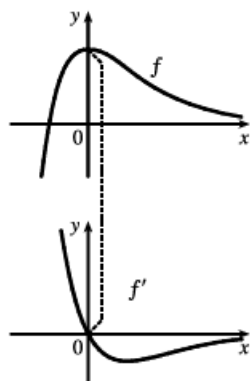
4.



Section 2.8 In Class Problems

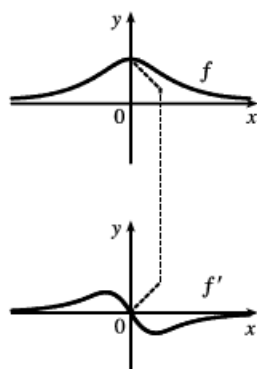
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5.



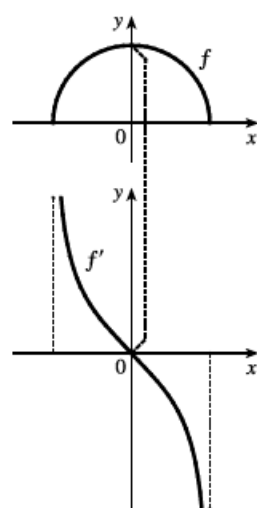
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6.



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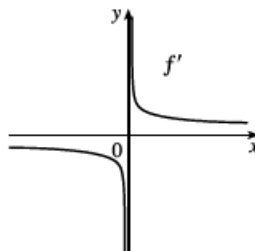
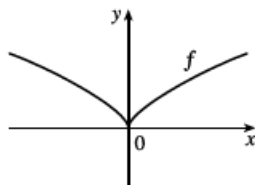
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Section 2.8 In Class Problems

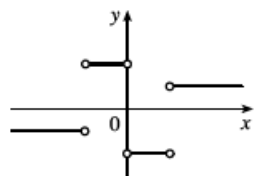
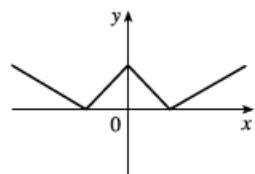
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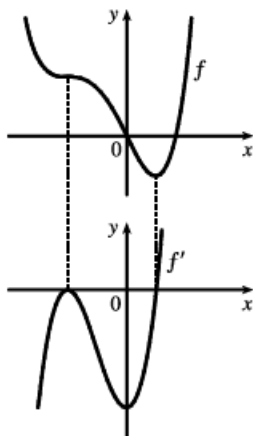
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Section 2.8 In Class Problems

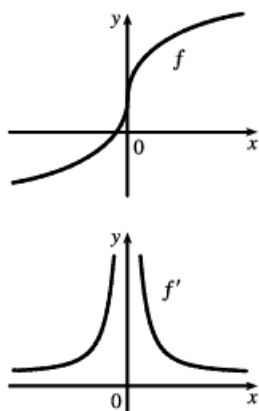
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10.



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11.



12. The slopes of the tangent lines on the graph of $y = P(t)$ are always positive, so the y -values of $y = P'(t)$ are always positive. These values start out relatively small and keep increasing, reaching a maximum at about $t = 6$. Then the y -values of $y = P'(t)$ decrease and get close to zero. The graph of P' tells us that the yeast culture grows most rapidly after 6 hours and then the growth rate declines.

