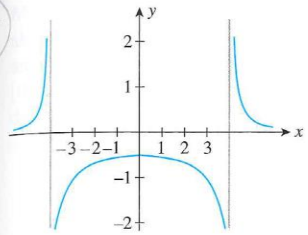
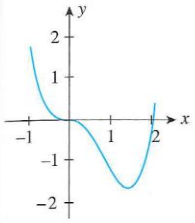
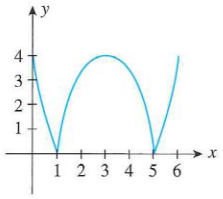
4.



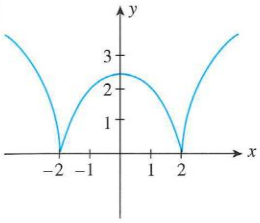
5.



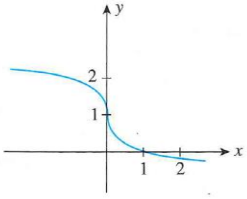
6.



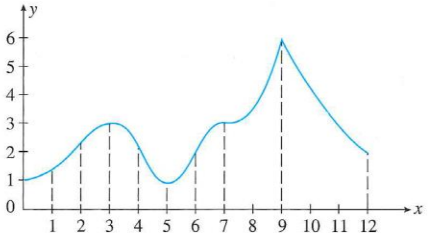
7.



8.



9. Refer to the graph of f shown in the following figure:



   a. Find the intervals where f is concave upward and the intervals where f is concave downward.

   b. Find the inflection points of f.

10. Refer to the figure for Exercise 9.

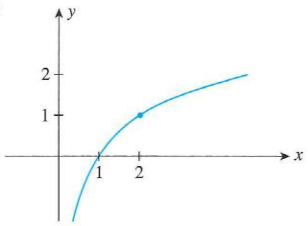
   a. Explain how the Second Derivative Test can be used to show that the critical number 3 gives rise to a relative maximum of f and the critical number 5 gives rise to a relative minimum of f.

   b. Explain why the Second Derivative Test cannot be used to show that the critical number 7 does not give rise to a relative extremum of f nor can it be used to show that the critical number 9 gives rise to a relative maximum of f.

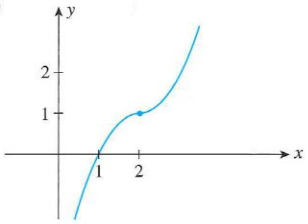
In Exercises 11–14, determine which graph—(a), (b), or (c)—is the graph of the function f with the specified properties.

11. $f(2) = 1, f'(2) > 0$, and $f''(2) < 0$

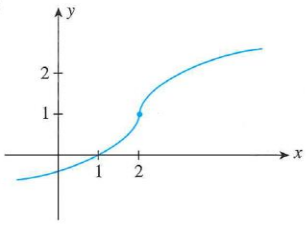
(a)



(b)

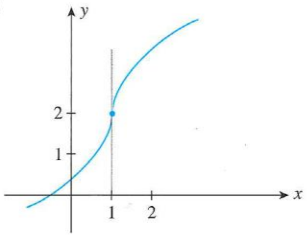


(c)



12. $f(1) = 2, f'(x) > 0$ on $(-\infty, 1)$ and $(1, \infty)$, and $f''(1) = 0$

(a)



(b)