12. Label points $A, B, C, D, E,$ and F on the graph of $y = f(x)$ in Figure 2.20.
   - (a) Point A is a point on the curve where the derivative is negative.
   - (b) Point B is a point on the curve where the value of the function is negative.
   - (c) Point C is a point on the curve where the derivative is largest.
   - (d) Point D is a point on the curve where the derivative is zero.
   - (e) Points E and F are different points on the curve where the derivative is about the same.

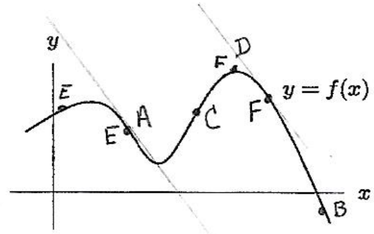


Figure 2.20

Problems

13. Suppose that $f(x)$ is a function with $f(100) = 35$ and $f'(100) = 3$. Estimate $f(102)$.

14. Show how to represent the following on Figure 2.21.
   - (a) $f(4)$
   - (b) $f(4) - f(2)$
   - (c) $\dfrac{f(5) - f(2)}{5 - 2}$
   - (d) $f'(3)$

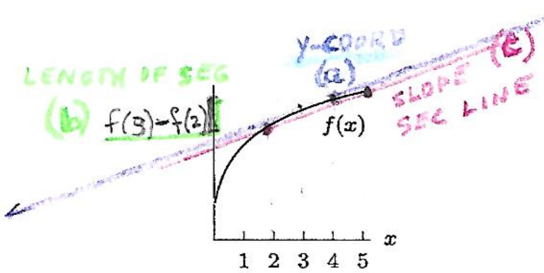


Figure 2.21

15. For each of the following pairs of numbers, use Figure 2.21 to decide which is larger. Explain your answer.
   - (a) $f(3)$ or $f(4)$?
   - (b) $f(3) - f(2)$ or $f(2) - f(1)$?
   - (c) $\dfrac{f(2) - f(1)}{2 - 1}$ or $\dfrac{f(3) - f(1)}{3 - 1}$?
   - (d) $f'(1)$ or $f'(4)$?

16. With the function f given by Figure 2.21, arrange the following quantities in ascending order:

$$0,\quad f'(2),\quad f'(3),\quad f(3) - f(2)$$

17. The function in Figure 2.22 has $f(4) = 25$ and $f'(4) = 1.5$. Find the coordinates of the points A, B, C.

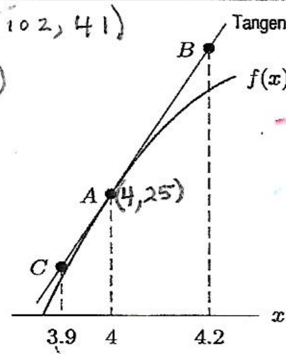
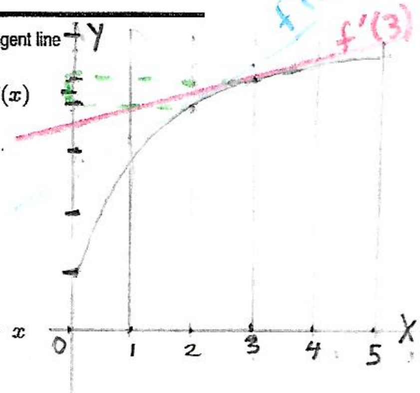


Figure 2.22



18. Use Figure 2.23 to fill in the blanks in the following statements about the function g at point B.
   - (a) $g(\_\_) = \_\_$
   - (b) $g'(\_\_) = \_\_$

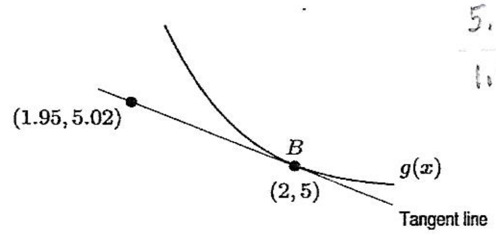


Figure 2.23

22. (a) If f is even and $f'(10) = 6$, what is $f'(-10)$?
   - (b) If f is any even function and $f'(0)$ exists, what is $f'(0)$?

23. If g is an odd function and $g'(4) = 5$, what is $g'(-4)$?

26. Estimate the instantaneous rate of change of the function $f(x) = x \ln x$ at $x = 1$ and at $x = 2$. What do these values suggest about the concavity of the graph between 1 and 2?