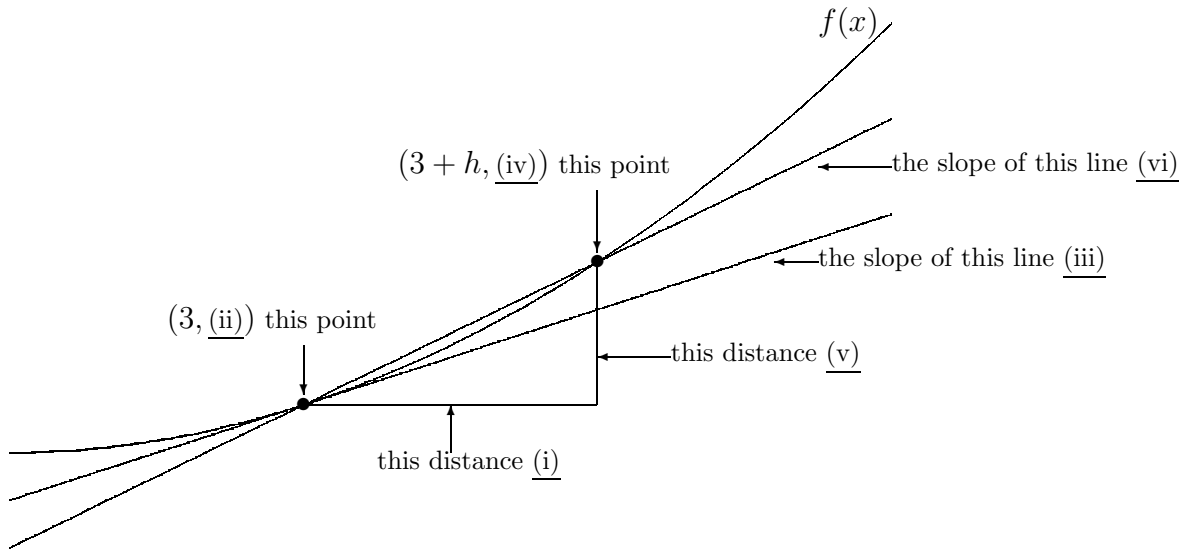
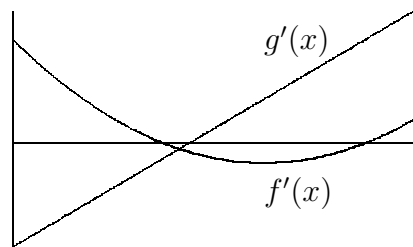


MATH 112 B - Spring 2003
Exam 1, Version 1 - Hints and Answers

1. (a) (4 points) ANSWERS: $f'(x) = 2x - 4$, slope= $f'(3) = 2$
 (b) (6 points) $\frac{f(3+h) - f(3)}{h} = (0)h^2 + (1)h + 2$
 (c) (6 points)



2. (a) (4 points) ANSWER: $x = 10.5$
 (b) (4 points) HINT: $f'(x)$ is a quadratic function whose graph is a parabola that opens upward. The derived graph of $f(x)$ hits its lowest point at the vertex of $f'(x)$.
 ANSWER: $x = 5$
 (c) (4 points) HINT: Find where $f'(x) = 0$.
 ANSWER: $x = 3$ and 7
 (d) (4 points) HINT: $f(x)$ decreases when $f'(x)$ is negative. $g(x)$ decreases when $g'(x)$ is negative. $f'(x)$ is negative from $x = 3$ to $x = 7$. $g'(x)$ is negative from $x = 0$ to $x = 3.5$.



ANSWER: from $x = 3$ to $x = 3.5$

3. (a) (4 points) HINT: Take $q_1 = 5$ and $q_2 = 11$ in the given formula.
ANSWER: slope = 33
- (b) (4 points) HINT: You want to compute $C(7) - C(4)$. Take $q_1 = 4$ and $q_2 = 7$ in the formula for the slope of the secant line. That will give $\frac{C(7) - C(4)}{7 - 4}$. Multiply this slope by 3 to get the change in TC .
ANSWER: 76.5 hundred dollars
- (c) (4 points) HINT: Take $q_1 = m$ and $q_2 = m + h$.
ANSWER: $\frac{C(m+h) - C(m)}{h} = 3m + \frac{3}{2}h + 9$
- (d) (6 points) HINT: Take your answer to part (c) and let h go to 0 to find $C'(m)$. Then evaluate $C'(m)$ at $m = 2$.
ANSWER: $C'(m) = 3m + 9$, cost of 201st clock = 15 dollars