# Maxima and Minima of functions- Answer Key



$f(x)$

$x_1$  $x_2$  $x_3$  $x_4$  $x_5$  $x_6$

$g'(x)$
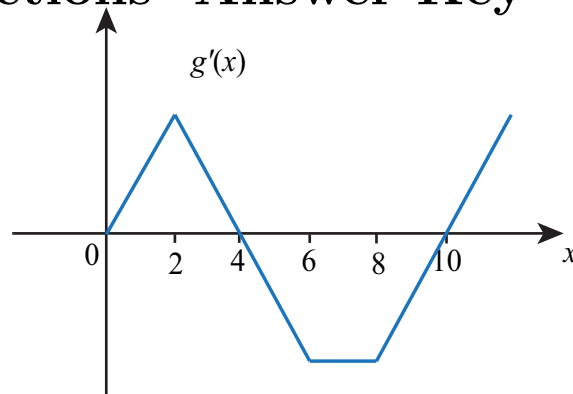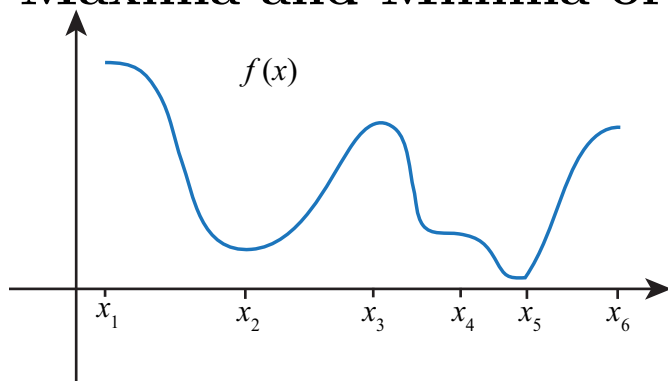
1. Find the points where $f(x)$ (shown above) has a local maxima.

   $x_1, x_3, x_6$

2. Find the points where $f(x)$ (shown above) has a local minima.

   $x_2, x_5$

3. Find the critical points of $g(x)$. Refer to graph of $g'(x)$ above.

   $4, 10$

4. Find the maxima and minima of $g(x)$. Refer to graph of $g'(x)$ above.

   There is a minima at $x = 4$ and maxima at $x = 10$.

5. Where is $g(x)$ decreasing and concave up? Refer to graph of $g'(x)$ above.

   $[8, 10]$

6. Describe the graph of $g(x)$ for $x \in [6, 8]$. Refer to graph of $g'(x)$ above.

   The graph of $g(x)$ is a falling line.

7. Find the critical point(s) of $h(x) = 2x^3 - 15x^2 + 36x$.

   $x = 2, 3$

8. Find the maximum value of $h(x) = 2x^3 - 15x^2 + 36x$.

   $h(2) = 28$

9. Find the critical point(s) of $u(x) = e^{x^2 - 2ax}$.

   $x = a$

10. Find the value of $a$ such that $x = a$ is a minima of $u(x) = e^{x^2 - 2ax}$.

    Any value of $a$, since $h''(a) > 0$.

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