Derivative Function Worksheet - Answer Key

Fig 1

y

$f'(x)$

$f(x)$

I

x

Fig 2

y

$g(x)$

$g'(x)$

$g\uparrow$ $g\uparrow$ $g\uparrow$ x
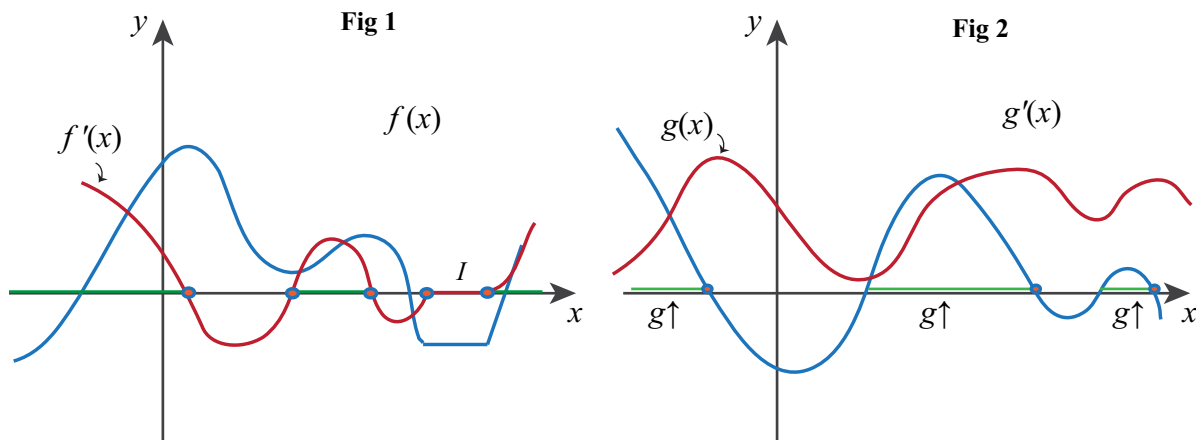
1. Mark the x-values where $f'(x) = 0$ in **Fig 1**.
   The marked points and interval I

2. Mark the x-values where $f'(x) > 0$ in **Fig 1**.

3. Mark the x-values where g is maximum in **Fig 2**.

4. Mark the intervals where g is increasing in **Fig 2**.

5. Sketch the graph of $f'(x)$ on the same axes in **Fig 1**.

6. Sketch the graph of $g(x)$ on the same

axes in **Fig 2**.

7. Find the slope of the tangent to $f(x) = 3x^3 + 3$ at $x = -2$.
   18

8. Use the answer from (7) to find the equation of the tangent line to $f(x) = 3x^3 - 3$ at $x = -2$.
   $y = 18x + 57$

9. If $g'(x) = \frac{1}{x^2 - 5x + 6}$, find the points where $g(x)$ is not differentiable.
   $x = 2$ and $x = 3$

10. Write the necessary condition for $y = \frac{f'(a)}{a}x$ to be a tangent line to $f(x)$ at $x = a$.
    $f(a) = f'(a)$

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