

Quiz 5 Outline

Format. This quiz has **6 multiple-choice** questions.

1. (1 point) Use the product rule to determine the horizontal tangents of a function.

Example: Let $h(t) = t^2e^t$. Find **all** values of t for which $h'(t) = 0$.

- (a) $t = -2$
- (b) $t = 2$
- (c) $t = 0$
- (d) $t = 0, 2$
- (e) $t = -2, 0$

2. (1 point) Use the quotient rule to compute the derivative of a function.

Example: Compute $\frac{d}{dx} \left(\frac{e^x}{x^2 + 1} \right)$

- (a) $\frac{(x^2 + 1)e^x + e^x(2x)}{(x^2 + 1)^2}$
- (b) $\frac{e^x}{2x}$
- (c) $\frac{2xe^x}{(x^2 + 1)^2}$
- (d) $\frac{(x^2 + 1)e^x - e^x(2x)}{(x^2 + 1)^2}$
- (e) $\frac{e^x}{x^2 + 1}$

3. (2 points) Use the quotient rule to compute the derivative of a function at a point.

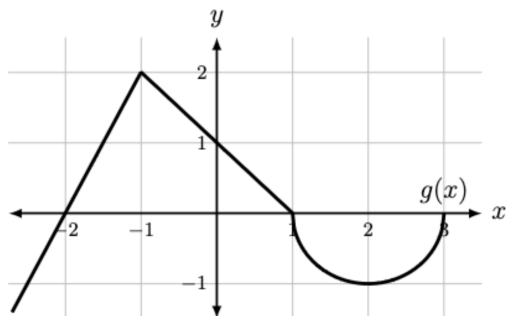
Example: Compute $g'(4)$, given that

$$g(x) = \frac{x - \sqrt{x}}{\sqrt{x}}.$$

- (a) 4
- (b) 0
- (c) 1
- (d) $\frac{1}{4}$
- (e) 3

4. (6 points) Use a graph and a table to compute derivatives of products and quotients.

Example: Use the following graph and table to answer the questions below.



x	$f(x)$	$f'(x)$
-2	-1	2
-1	1	-1
0	3	1
1	-1	3
2	1	-2

1. If $F(x) = \frac{f(x)}{g(x)}$, find $F'(0)$.
 - (a) 4
 - (b) 2
 - (c) $\frac{1}{2}$
 - (d) -4
 - (e) 0
2. If $G(x) = xf(x)$, find $G'(-2)$.
 - (a) -3
 - (b) 3
 - (c) 1
 - (d) -5
 - (e) 5
3. If $H(x) = \frac{f(x)g(x)}{x}$, find $H'(2)$.
 - (a) $\frac{3}{2}$
 - (b) $-\frac{3}{4}$
 - (c) $\frac{5}{4}$
 - (d) 1
 - (e) $-\frac{5}{4}$