

GROUP QUIZ 6 QUESTIONS

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- [1] Find the derivative of the following function using any differentiation shortcuts discussed so far. **DO NOT SIMPLIFY YOUR ANSWER.**

[a] $f(x) = \frac{4^{2x}}{x^2 + \tan^2 x}$

[b] $f(x) = \csc^2(\sec x + 5^{x^2})$

- [2] Find the slope of the tangent line to the following curve at the given point.
HINT: CONSIDER HOW TO REDUCE THE AMOUNT/COMPLEXITY OF WORK AS MUCH AS POSSIBLE.

[a] $xy^2 = \sqrt{3x^2y^3 - 8}$ @ (1, 2)

[b] $y = \frac{5 + 3x}{y^3 - x^3y^2}$ @ (1, 2)

- [3] The following table gives values and derivatives of two functions at various inputs.

x	-3	-2	-1	0	1	2	3	4
$f(x)$	-2	0	2	4	-3	-1	1	3
$f'(x)$	4	-1	-3	2	-4	3	-2	1
$g(x)$	-1	1	3	-3	4	-2	0	2
$g'(x)$	2	4	-4	-1	3	1	-3	-2

- [a] If $k(x) = f(g(f(x)))$, find the equation of the tangent line to $y = k(x)$ at $x = 2$.
- [b] If $m(x) = f(x^2g(x))$, find the equation of the tangent line to $y = m(x)$ at $x = -1$.

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