

BC Calculus Readiness Quiz 3
More Derivative Rules and Higher Order Derivatives

Handwritten notes
with derivative
rules allowed.

Name: _____
Teacher: _____

Write all the derivative rules we have learned here. You need to memorize these eventually.

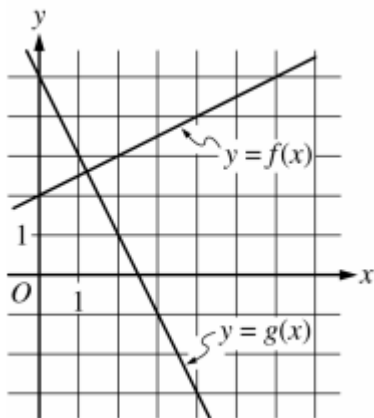
The Product Rule: $\frac{d}{dx}[f(x)g(x)] =$	The Quotient Rule $\frac{d}{dx}\left[\frac{f(x)}{g(x)}\right] =$
$\frac{d}{dx}[\sin x] =$	$\frac{d}{dx}[\cos x] =$
$\frac{d}{dx}[\tan x] =$	$\frac{d}{dx}[\cot x] =$
$\frac{d}{dx}[\sec x] =$	$\frac{d}{dx}[\csc x] =$

Find the derivative of each function. Show steps with proper notation.

1. $f(x) = 3\sin(x) + 5x^3$ Also find $f''(x)$:	2. $f(x) = x^3 \sec(x)$
3. $f(x) = \frac{x}{\cot(x) - 1}$	4. $f(x) = 3\sin(x)\cos(x)$

5. Find the equation of the tangent line at $x = \frac{3\pi}{4}$ if $f(x) = \tan(x)$. Use proper notation.

6.



You do not need to find the equation of $f(x)$ and $g(x)$.
Show your work with proper notation.

The figure above shows the graphs of the functions f and g . If $h(x) = f(x)g(x)$, then $h'(2) =$

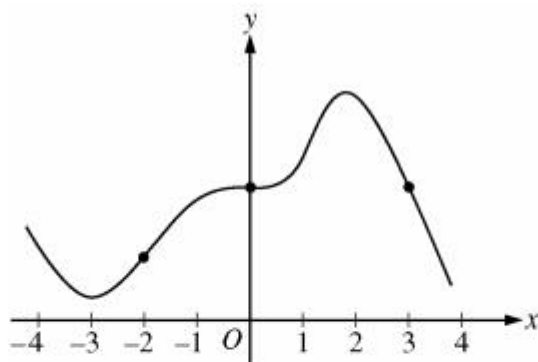
- (A) $\frac{13}{2}$ (B) $\frac{1}{2}$ (C) -1 (D) $-\frac{11}{2}$

7.

If $f(x) = \frac{5-x}{x^3+2}$, then $f'(x) =$

- (A) $\frac{-4x^3 + 15x^2 - 2}{(x^3 + 2)^2}$ (C) $\frac{2x^3 - 15x^2 - 2}{(x^3 + 2)^2}$
 (B) $\frac{-2x^3 + 15x^2 + 2}{(x^3 + 2)^2}$ (D) $\frac{4x^3 - 15x^2 + 2}{(x^3 + 2)^2}$

8.



Graph of f

The graph of a differentiable function f is shown in the figure above. Which of the following is true?

- (A) $f'(-2) < f'(0) < f'(3)$
 (B) $f'(-2) < f'(3) < f'(0)$
 (C) $f'(3) < f'(-2) < f'(0)$
 (D) $f'(3) < f'(0) < f'(-2)$