

Student ID		

Last Name: _____

First Name: _____

Show all your work.
If necessary, use extra sheets.

When appropriate,
BOX your final answer.

MA1
Homework

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In problems 1 – 6, find $f'(x)$.

1. $f(x) = (3x^2 + 6)(2x - \frac{1}{4})$

2. $f(x) = (2 - x - 3x^3)(7 + x^5)$

3. $f(x) = (x^3 + 7x^2 - 8)(2x^{-3} + x^{-4})$

4. $f(x) = \left(\frac{1}{x} + \frac{1}{x^2}\right)(3x^3 + 27)$

5. $f(x) = (3x^2 + 1)^2$

6. $f(x) = (x^5 + 2x)^2$

7. For what values of x is the following function continuous?

$$f(x) = \begin{cases} \frac{x-1}{\sqrt{x}-1} & x > 1 \\ 5-3x & -2 \leq x \leq 1 \\ \frac{6}{x-4} & x < -2 \end{cases}$$

8. If $f(x) = \begin{cases} \frac{3-10x^5}{10-7x^3+3x^5} & x > 0 \\ -8x^2+9 & x \leq 0 \end{cases}$, find (a) $\lim_{x \rightarrow +\infty} f(x)$ and (b) $\lim_{x \rightarrow -\infty} f(x)$.