

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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1. If  $y = \frac{1}{5x-3}$ , find  $y'(1)$ .

2. If  $y = \frac{3}{\sqrt{x+2}}$ , find  $y'(1)$ .

3. If  $x = \frac{3t}{2t+1}$ , find  $\frac{dx}{dt}$ .

4. If  $x = \frac{t^2+1}{3t}$ , find  $\frac{dx}{dt}$ .

5. If  $y = \frac{2x-1}{x+3}$ , find  $\left. \frac{dy}{dx} \right|_{x=1}$ .

6. If  $y = \frac{4x+1}{x^2-5}$ , find  $\left. \frac{dy}{dx} \right|_{x=1}$ .

7. If  $y = \left(\frac{3x+2}{x}\right)(x^{-5} + 1)$ , find  $\frac{dy}{dx}\Big|_{x=1}$ .

8. For what value of  $a$  is the function  $f(x) = \begin{cases} ax + 5 & x < 4 \\ x^2 - x & x \geq 4 \end{cases}$  continuous at  $x = 4$ ?

9. Use the definition of the derivative to find  $f'(2)$  if  $f(x) = ax^2 + bx + c$ .