

Name: \_\_\_\_\_ / 6

You will have 15 minutes to complete the task. No aids (calculator, notes, text, etc.) are permitted. Show all work for full credit and box your final answer.

1. [2 points] For the given function  $f(x) = \frac{2x}{x-3}$  find:

a.  $\frac{f(z+3) - f(z)}{z} =$

b.  $\text{Dom}(f) =$

2. [2 points] For the given relation  $R = \{(0,0), (1,2), (-4,1), (5,3)\}$  find the following:

a.  $R^{-1} =$

b.  $\text{Dom}(R^{-1}) =$

c.  $\text{Ran}(R^{-1}) =$

3. [2 points] Sketch the graphs of the following functions:

(a)  $f(x) = \frac{1}{x^4}$

(b)  $g(x) = \frac{1}{(x-1)^3}$

