Name:
Group 1
Result:

1. *(3 points)*

Let $f(x) = \dfrac{3x-6}{x+1}$.

(a) State the domain and range of $f(x)$.

(b) Find $f^{-1}(x)$, the inverse of $f(x)$.

(c) State the domain and range of the inverse function.

2. *(5 points)*

Let $f(x) = \dfrac{2-x}{3}$ and $g(x) = \sqrt{x-1} + 3$.

(a) Find $f^{-1}(x)$ and $g^{-1}(x)$.

(b) Calculate $(g \circ f^{-1})(-1)$ and $(f \circ g^{-1})(5)$.

(c) Solve $(f \circ f \circ f)(x) = 2$.

3. *(4 points)*

Consider $f(x) = (5 - x)(x + 1)$. The domain of $f(x)$ is $x \geq a$, where a is the least possible value so that the inverse function exists.

(a) Find the value of a.

(b) Find $f^{-1}(x)$.

(c) Sketch $f(x)$ and $f^{-1}(x)$ on the same diagram.