

MCS-236 Homework 5

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Example 2.3 on page 389 shows the function $f : \mathbf{R} \rightarrow \mathbf{R}$ defined by $f(x) = 3x - 8$ for all $x \in \mathbf{R}$ is bijective. Consider the following two variations of the function definition:

1. The function $g : \mathbf{R} \rightarrow \mathbf{R}$ defined by

$$g(x) = \begin{cases} 3x - 8 & \text{if } x \geq 0 \\ 3x & \text{if } x < 0 \end{cases}$$

2. The function $h : \mathbf{R} \rightarrow \mathbf{R}$ defined by

$$h(x) = \begin{cases} 3x - 8 & \text{if } x \geq 0 \\ 8 - 3x & \text{if } x < 0 \end{cases}$$

Is each of these functions bijective?