

## Answer on Question #52804 – Math – Real Analysis

### Question

What is the domain of  $\arcsin(\sin x)$ ?

### Solution

The domain of  $\sin x$  is  $\mathbb{R}$  (the set of real numbers), the range of  $\sin x$  is  $[-1; 1]$ , because  $\sin x$  takes on values from  $[-1; 1]$  for every real  $x$ . The domain of  $\arcsin(t)$  is  $[-1; 1]$ , denote  $t = \sin x$  and obtain that  $\arcsin(\sin x)$  is correct for every real number  $x$ .

Thus, the domain of  $\arcsin(\sin x)$  is  $\mathbb{R}$  (the set of real numbers).

**Answer:**  $\mathbb{R}$ .