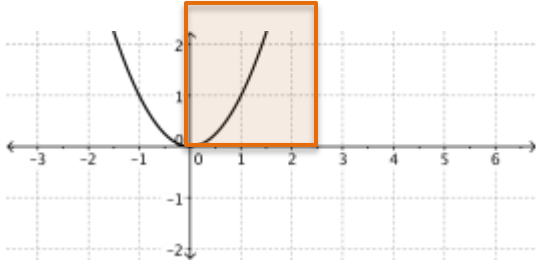


## Inverse Trig Functions

0.  $f(x) = x^2$

Restrict domain to be 1-1:  $[0, \infty)$

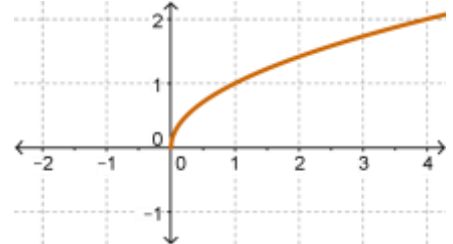
Range of restricted domain:  $[0, \infty)$



$f^{-1}(x) = \sqrt{x}$

Domain:  $[0, \infty)$

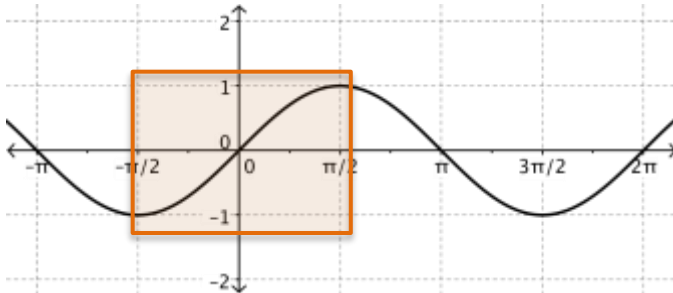
Range:  $[0, \infty)$



1.  $f(x) = \sin(x)$

Restrict domain to be 1-1:  $[-\frac{\pi}{2}, \frac{\pi}{2}]$

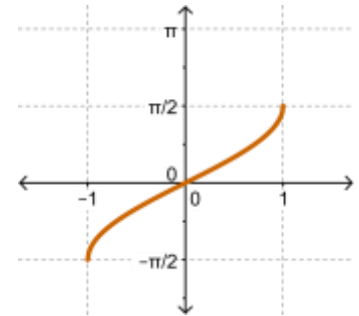
Range of restricted domain:  $[-1, 1]$



$f^{-1}(x) = \sin^{-1}(x)$

Domain:  $[-1, 1]$

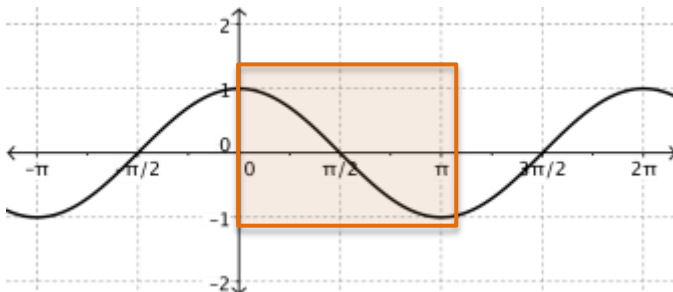
Range:  $[-\frac{\pi}{2}, \frac{\pi}{2}]$



2.  $f(x) = \cos(x)$

Restrict domain to be 1-1:  $[0, \pi]$

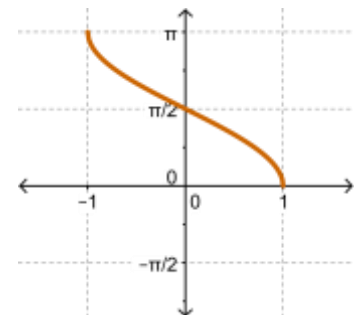
Range of restricted domain:  $[-1, 1]$



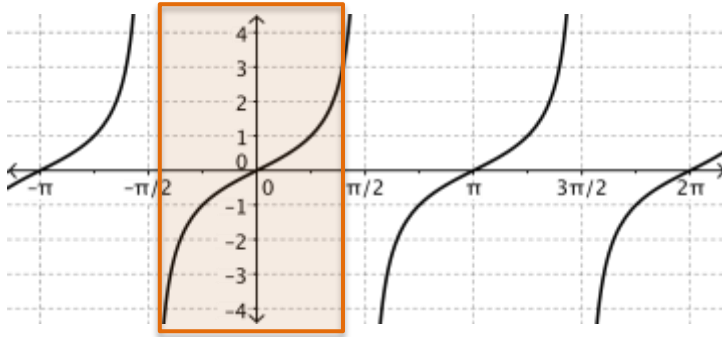
$f^{-1}(x) = \cos^{-1}(x)$

Domain:  $[-1, 1]$

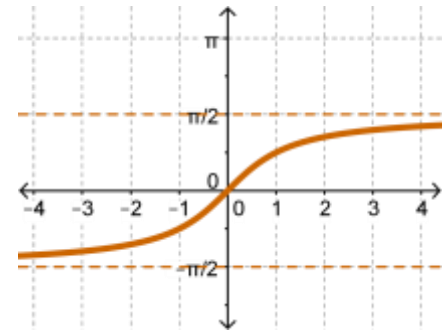
Range:  $[0, \pi]$



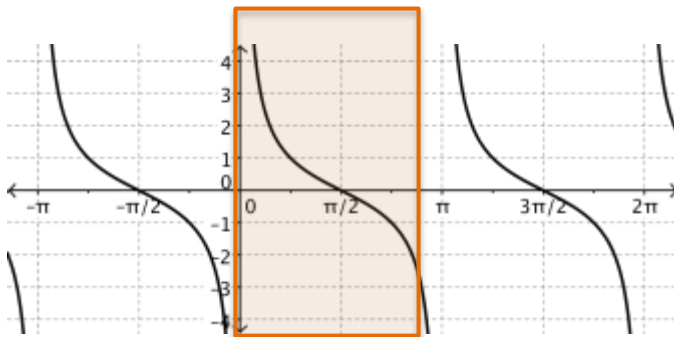
3.  $f(x) = \tan(x)$   
 Restrict domain to be 1-1:  $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$   
 Range of restricted domain:  $(-\infty, \infty)$



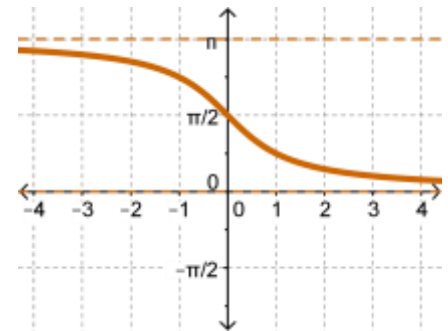
$f^{-1}(x) = \tan^{-1}(x)$   
 Domain:  $(-\infty, \infty)$   
 Range:  $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$



4.  $f(x) = \cot(x)$   
 Restrict domain to be 1-1:  $(0, \pi)$   
 Range of restricted domain:  $(-\infty, \infty)$



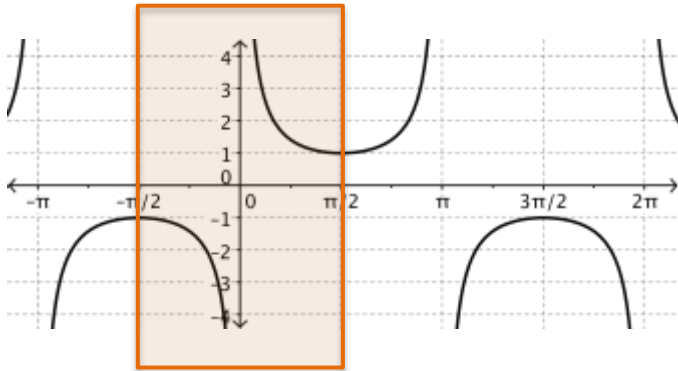
$f^{-1}(x) = \cot^{-1}(x)$   
 Domain:  $(-\infty, \infty)$   
 Range:  $(0, \pi)$



5.  $f(x) = \underline{\csc(x)}$

Restrict domain to be 1-1:  $\underline{\left[-\frac{\pi}{2}, 0\right) \cup \left(0, \frac{\pi}{2}\right]}$

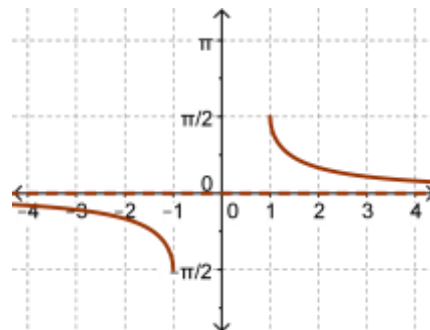
Range of restricted domain:  $\underline{(-\infty, -1] \cup [1, \infty)}$



$f^{-1}(x) = \underline{\csc^{-1}(x)}$

Domain:  $\underline{(-\infty, -1] \cup [1, \infty)}$

Range:  $\underline{\left[-\frac{\pi}{2}, 0\right) \cup \left(0, \frac{\pi}{2}\right]}$



6.  $f(x) = \underline{\sec(x)}$

Restrict domain to be 1-1:  $\underline{\left[0, \frac{\pi}{2}\right) \cup \left(\frac{\pi}{2}, \pi\right]}$

Range of restricted domain:  $\underline{(-\infty, -1] \cup [1, \infty)}$



$f^{-1}(x) = \underline{\sec^{-1}(x)}$

Domain:  $\underline{(-\infty, -1] \cup [1, \infty)}$

Range:  $\underline{\left[0, \frac{\pi}{2}\right) \cup \left(\frac{\pi}{2}, \pi\right]}$

