

## Worksheet 9

**Exercise 1** Find the exact value.

a)  $\arcsin(0)$

b)  $\arctan(1)$

c)  $\arccos(1/2)$

d)  $\arccos(-1/2)$

**Exercise 2** Find the domain and range of the function

$$f(x) = \arcsin(1 - x^2)$$

**Exercise 3** Find the limit

a.  $\lim_{x \rightarrow -1^+} \arcsin x$

b.  $\lim_{x \rightarrow 0^+} \arctan(\ln x)$

**Exercise 4** Find the limit. Hint: you can use l'Hôpital's rule

a.  $\lim_{x \rightarrow 0^+} x \ln x$

b.  $\lim_{x \rightarrow 0^+} x^x$

**Exercise 5** Prove that for all  $x \in [0, \frac{\pi}{2}]$

$$\arcsin(x) + \arccos(x) = \frac{\pi}{2}$$

**Exercise 6** Find the domain and sketch the graph of

a.  $f(x) = \sin(\arcsin x)$

b.  $g(x) = \arcsin(\sin x)$