

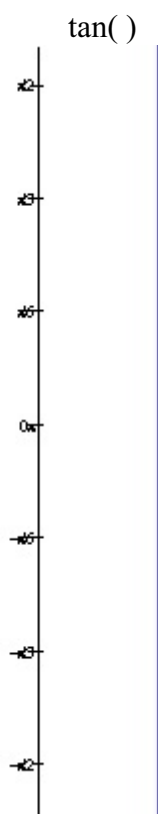
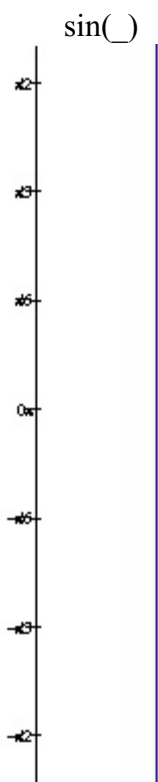
**Trig and Inverse Functions**  
**Tables. Mapping Figures, Graphs.**

---

1 Complete the following tables :

<b><i>t</i></b>	$-\pi/2$	$-\pi/3$	$-\pi/4$	$-\pi/6$	0	$\pi/6$	$\pi/4$	$\pi/3$	$\pi/2$
<b><math>\sin(t)</math></b>									
<b><math>\tan(t)</math></b>	****								****
<b><i>t</i></b>	0	$\pi/6$	$\pi/4$	$\pi/3$	$\pi/2$	$2\pi/3$	$3\pi/4$	$5\pi/6$	$\pi$
<b><math>\cos(t)</math></b>									

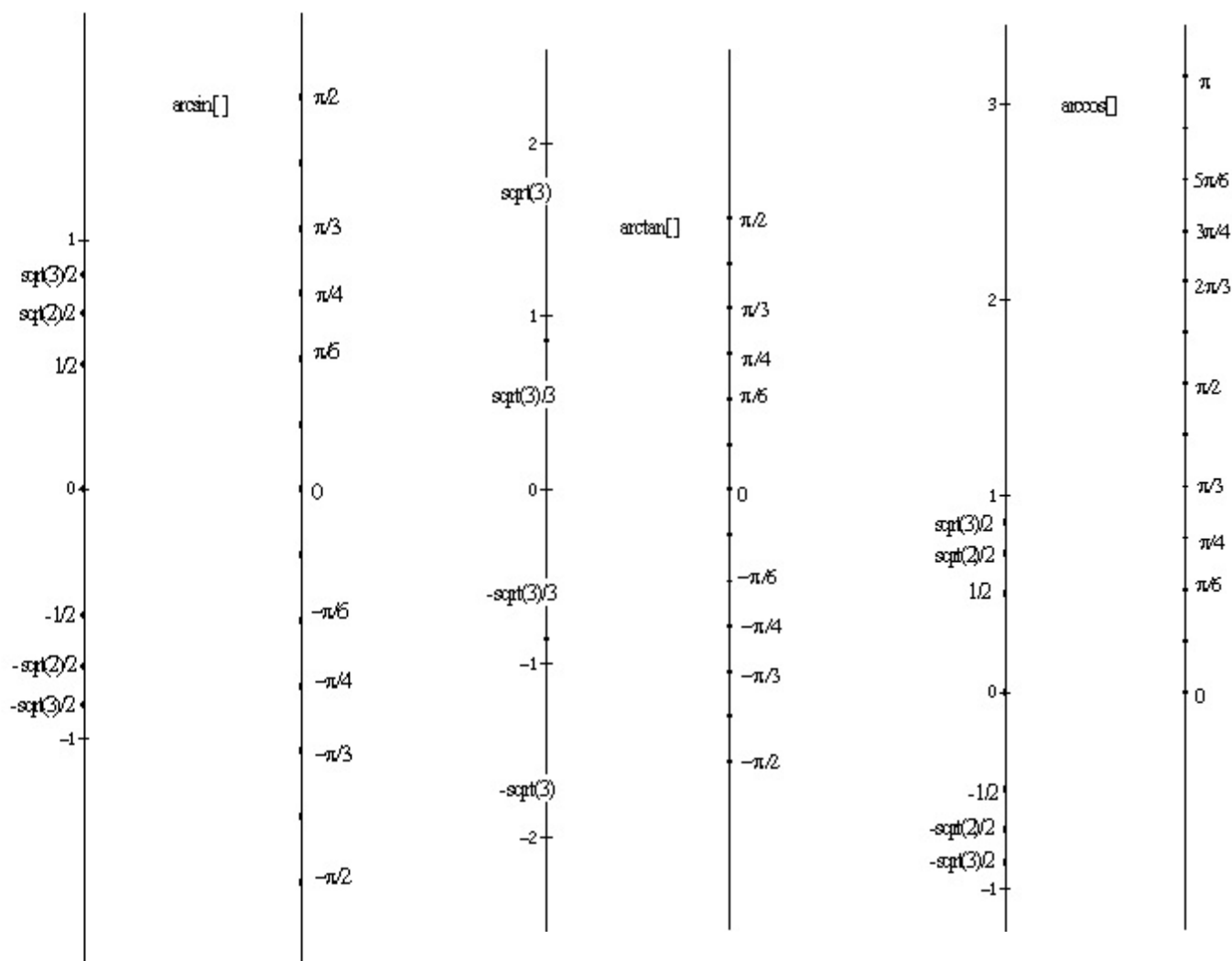
2. Complete the following mapping figures for sine, tangent and cosine with the numbers from your tables (determine an appropriate scale for the target values).



3. Complete the following tables for the inverse sine, inverse tangent and inverse cosine functions:

$x$	-1	$-\frac{\sqrt{3}}{2}$	$-\frac{\sqrt{2}}{2}$	-1/2	0	1/2	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
<b>arcsin(x)</b>									
$x$	****	$-\sqrt{3}$	-1	$-\frac{\sqrt{3}}{3}$	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	****
<b>arctan(x)</b>	****								****
$x$	-1	$-\frac{\sqrt{3}}{2}$	$-\frac{\sqrt{2}}{2}$	-1/2	0	1/2	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
<b>arccos(x)</b>									

4. Complete the following mapping figures for arcsine, arctangent and arccosine with the numbers from your tables .



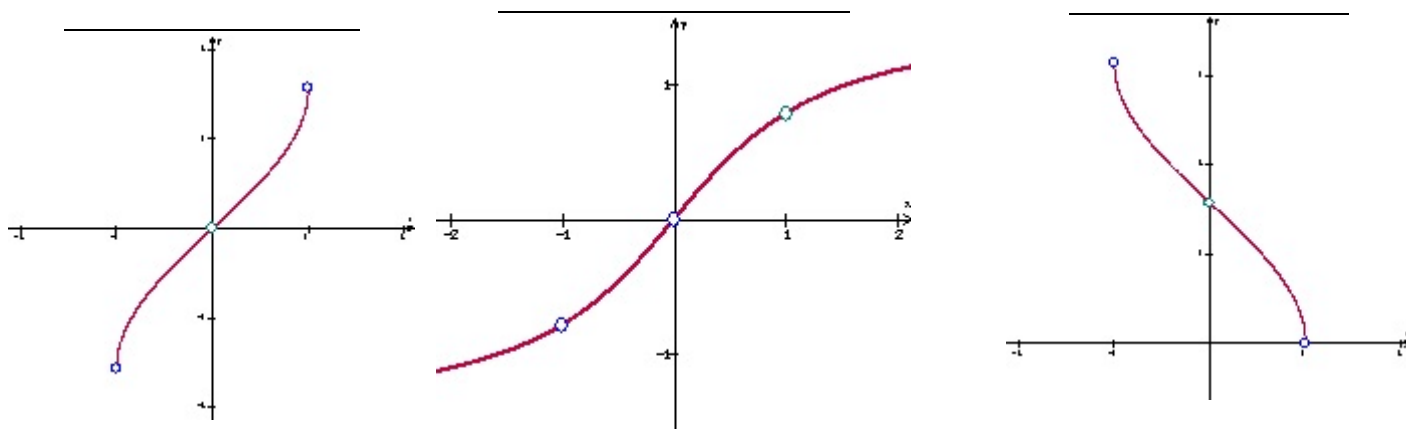
5. Explain briefly how the mapping figures for sine, cosine, and tangent are related to the mapping figures for arcsine, arctangent, and arccosine.

---

---

---

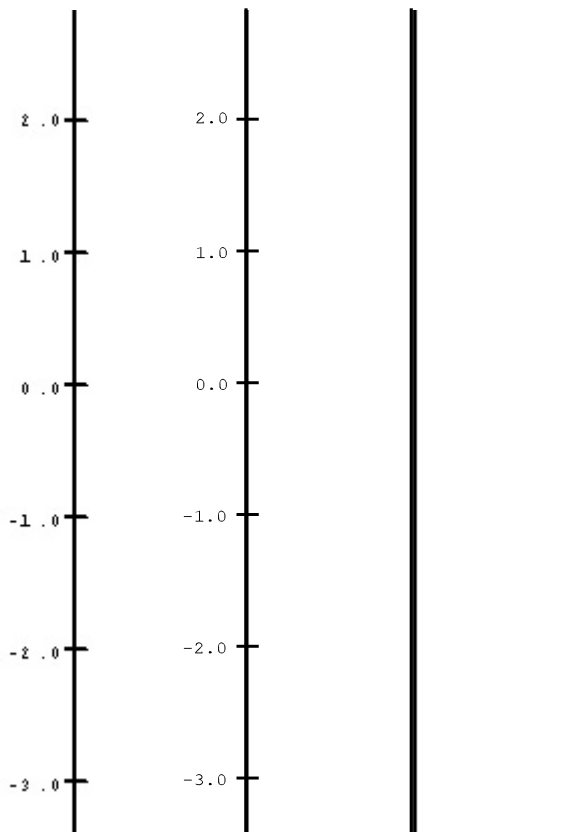
6. Below are the graphs for the arcsine, arccosine, and arctangent functions. Label each appropriately and indicate the coordinates for three points on each graph. Reflect each graph on the line  $y = x$  to show the related core function.



### Compositions

Suppose  $f(x) = 3\sin(2x + \pi/3) + 2$ .

1. Sketch mapping figures that visualize  $f$  as compositions of the sine function preceded and then followed by a linear function. (determine an appropriate scales for the various axes.).



- 2 Use your mapping figure to determine the amplitude, period and phase shift for this “sine wave”. Sketch a graph for  $f$ .