The University of New South Wales
School of Mathematics and Statistics

D op n C n

EXAC A E E C C

For certain values of , the trigonometric functions cos , sin and tan have values which are easily expressed, for example, as fractions or surds. You need to know of the following, without the assistance of a calculator.

	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	
cos	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0	-1
sin	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1	0
tan	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	undefined	0

Co n .

- The value of tan is undefined when = $\frac{\pi}{2}$. Please o no write "tan $\frac{\pi}{2}$ = ∞": this is nonsense, because ∞ is not a number.
- In university level mathematics, the *only* sensible way to measure angles is in radians. If you are in the habit of saying "cos 60° = $\frac{1}{2}$", you need to learn the radian version, otherwise the time you take for trig problems will be hugely increased. And don't forget that "cos 60 = $\frac{1}{2}$" is not just inferior, it is on .

The above table gives (mostly) the cases when is an angle in the first quadrant. To evaluate trigonometric functions for angles in other quadrants you need the following formulae – for more details see the "Trigonometric identities" worksheet:

c4̄8.8113081172c868(m)-0.11432.294(r)1.235(o)2.6307(p)-4.4028(–)2.6307(i)-2

EXE C E .

Please try to complete the following exercises. Remember that you nno expect to understand mathematics without doing lots of practice! Please do not look at the answers before trying the questions. If you get a question wrong you should go through your working carefully, find the mistake and fix it. If there is a mistake which you cannot find, or a question which you cannot even start, please consult your tutor or the Mathematics Drop–in Centre.

1. **Write out the table of exact values on page 1 from memory.**
2. **Calculate exact values of the following:**
   - **(a)** $\cos\left(\frac{3}{4}\right)$;
   - **(b)** $\cos\left(-\frac{5}{6}\right)$