

The unit circle

Every exact value, one page

Every angle Calculus I actually asks for, with cosine, sine and tangent exact. Cosine is the x-coordinate and sine is the y-coordinate of the point where the angle meets the circle, which is the whole reason the signs change by quadrant.

QUADRANT I: BOTH POSITIVE

ANGLE	RAD	COS	SIN	TAN
0°	0	1	0	0
30°	$\pi/6$	$\sqrt{3}/2$	$1/2$	$\sqrt{3}/3$
45°	$\pi/4$	$\sqrt{2}/2$	$\sqrt{2}/2$	1
60°	$\pi/3$	$1/2$	$\sqrt{3}/2$	$\sqrt{3}$
90°	$\pi/2$	0	1	undefined

QUADRANT II: COSINE NEGATIVE, SINE POSITIVE

ANGLE	RAD	COS	SIN	TAN
120°	$2\pi/3$	$-1/2$	$\sqrt{3}/2$	$-\sqrt{3}$
135°	$3\pi/4$	$-\sqrt{2}/2$	$\sqrt{2}/2$	-1
150°	$5\pi/6$	$-\sqrt{3}/2$	$1/2$	$-\sqrt{3}/3$
180°	π	-1	0	0

QUADRANT III: BOTH NEGATIVE

ANGLE	RAD	COS	SIN	TAN
210°	$7\pi/6$	$-\sqrt{3}/2$	$-1/2$	$\sqrt{3}/3$
225°	$5\pi/4$	$-\sqrt{2}/2$	$-\sqrt{2}/2$	1
240°	$4\pi/3$	$-1/2$	$-\sqrt{3}/2$	$\sqrt{3}$
270°	$3\pi/2$	0	-1	undefined

QUADRANT IV: COSINE POSITIVE, SINE NEGATIVE

ANGLE	RAD	COS	SIN	TAN
300°	$5\pi/3$	$1/2$	$-\sqrt{3}/2$	$-\sqrt{3}$
315°	$7\pi/4$	$\sqrt{2}/2$	$-\sqrt{2}/2$	-1
330°	$11\pi/6$	$\sqrt{3}/2$	$-1/2$	$-\sqrt{3}/3$
360°	2π	1	0	0

SIGNS BY QUADRANT I: cos +, sin +, tan + II: cos -, sin +, tan - III: cos -, sin -, tan + IV: cos +, sin -, tan -

How to use it. Cover the value columns and work down the angles saying each one out loud. Do it until you are not computing, only recalling. Quadrant I is the only block worth memorizing outright: the other three are the same three numbers wearing the signs of their quadrant.