Quadrantal angles:

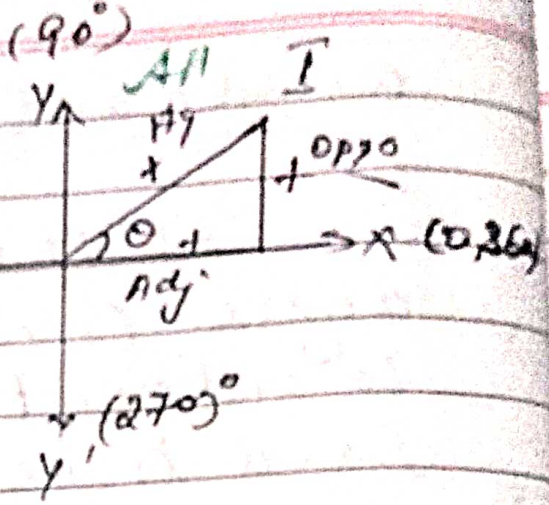
If the terminal ray of an angle coincide with one of the co-ordinate axes, the angle is said to be a quadrantal angle.
$0°, 90°, 180°, 270°, 360°$ etc are quadrantal angles.

Table of result

θ / T-fun	0°	90°	180°	270°	360°
Sin	0	1	0	−1	0
Cos	1	0	−1	0	1
tan	0	∞	0	∞	0
Cot	∞	0	∞	0	∞
Sec	1	∞	−1	∞	1
Cosec	∞	1	∞	−1	∞

Trigonometric functions of angles in quadrants.

(1) Suppose that θ lies in 1st quadrant



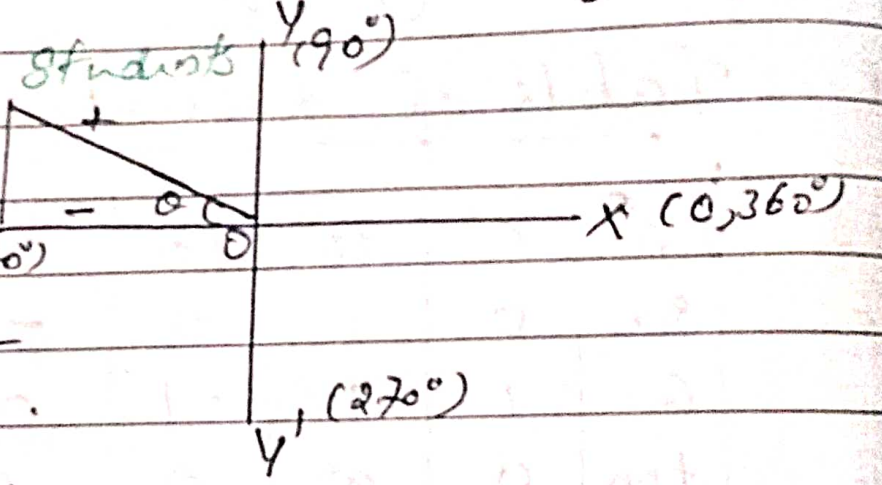
$\sin\theta = +ve$

$\cos\theta = +ve$.

$\tan\theta = +ve$.

when θ lies on the 1st quadrant; all trigonometric functions are positive.

(2). Suppose that θ lies in 2nd quadrant



$\sin\theta = \frac{+}{+} = +ve$

$\cos\theta = \frac{-}{+} = -ve$

$\tan\theta = \frac{+}{-} = -ve$

$\text{cosec}\,\theta = +ve$.

$\sec\theta = -ve$.

when θ lies on the 2nd quadrant sine and cosec are positive and other t-functions are negative.

(3) Suppose that θ lies in 3rd quadrant

$\sin\theta = \frac{-}{+} = -ve$

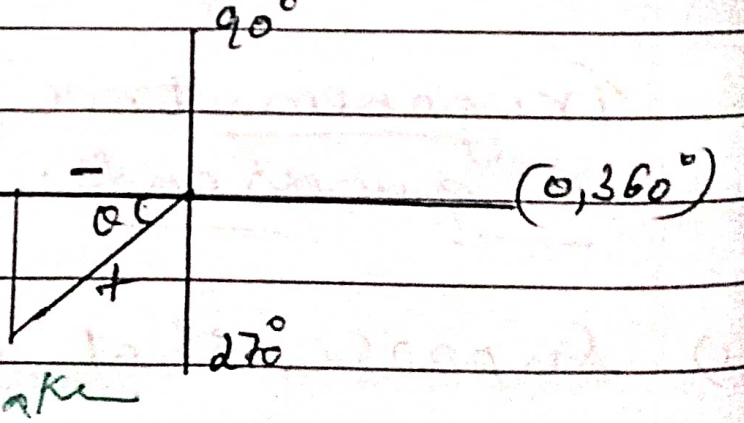
$\cos\theta = \frac{-}{+} = -ve$

$\tan\theta = \frac{-}{-} = +ve$

$\cot\theta = +ve$.

$\sec\theta = -ve$

$\text{cosec}\,\theta = -ve$



when α lies in 3rd quadrant tanα and cotα are positive and other t-functions are negative.

(4): Suppose that α lies in 4th quadrant

$\sin\alpha = \frac{-}{+} = -ve$

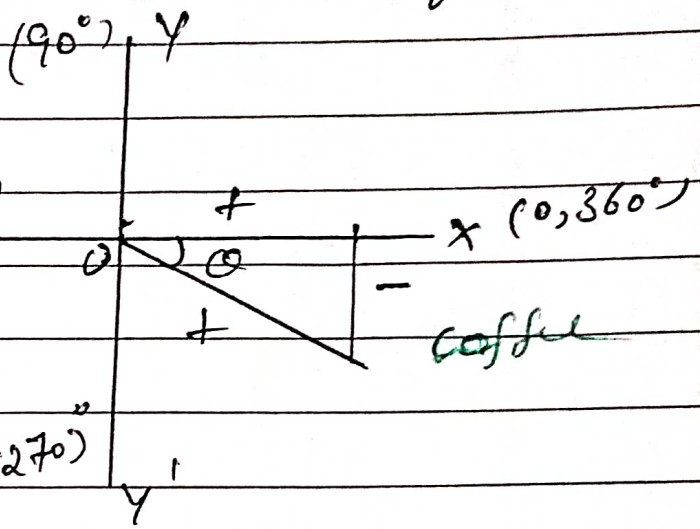
$\cos\alpha = \frac{+}{+} = +ve$

$\tan\alpha = \frac{-}{+} = -ve$

$\cot\alpha = \frac{+}{-} = -ve$.

$\sec\alpha = +ve$

$\operatorname{cosec}\alpha = -ve$.



Where α lies in 4th quadrant cosα and secα are positive and all other t-functions are negative.

Note

All Students take Coffee.