Right triangle Trigonometry
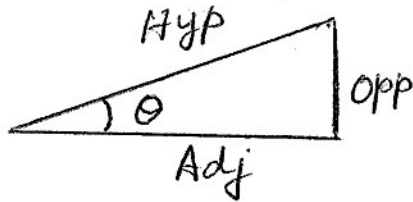
$$\sin\theta = \frac{opp}{Hyp}, \quad \cos\theta = \frac{Adj}{Hyp}$$

$$\tan\theta = \frac{opp}{Adj}$$

* Restricted to acute angles.
* Restricted to + angles (no negative angles)
* All trig. functions come out positive
* $\cot\theta = \dfrac{1}{\tan\theta}$

$\sec\theta = \dfrac{1}{\cos\theta}$

$\csc\theta = \dfrac{1}{\sin\theta}$

The Pythagorean identities:

$$\sin^2\theta + \cos^2\theta = 1$$
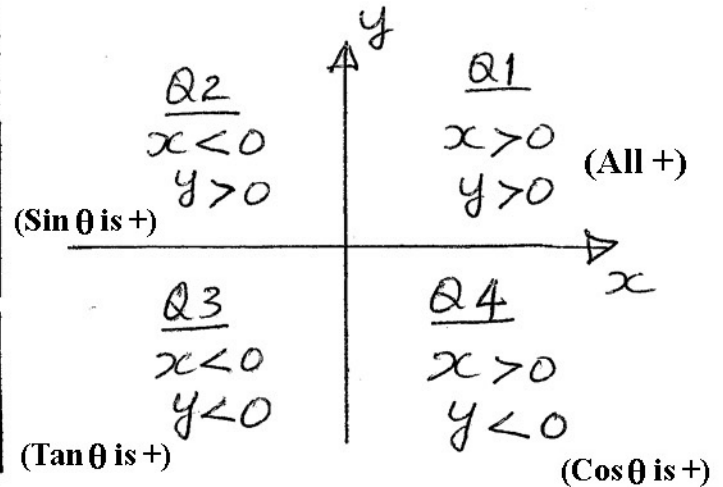$$1 + \tan^2\theta = \sec^2\theta$$
$$1 + \cot^2\theta = \csc^2\theta$$

Must also know the graphs of the 3 main functions: sin x, cos x, tan x, and their numerical values at key points, e.g., x=0, pi, pi/2, pi/4, 2pi. Of course, you can also get these using your calculator, which is okay on tests.

Graphical awareness should also inform you that cos x is even, whereas sin x, tan x are odd.

Which function is positive when theta is in which quadrant:

Q2	Q1
$x<0$	$x>0$
$y>0$	$y>0$ (All +)
(Sin θ is +)	
Q3	Q4
$x<0$	$x>0$
$y<0$	$y<0$
(Tan θ is +)	(Cos θ is +)

General Trig: Unit circle Perspective

* For any desired angle θ: Pick your (x,y) point on circumference of unit circle.

* Then

$$\sin\theta = y, \quad \cos\theta = x, \quad \tan\theta = \frac{y}{x}$$

* θ can be + or −; It can be larger than 360°