Use the elimination method to solve the following:

1. $2x + 5y = 24$
$4x + 3y = 20$

2. $5x + 2y = 13$
$2x + 6y = 26$

3. $3x + y = 11$
$9x + 2y = 28$

4. $x + 2y = 17$
$8x + 3y = 45$

5. $3x + 2y = 19$
$x + 8y = 21$

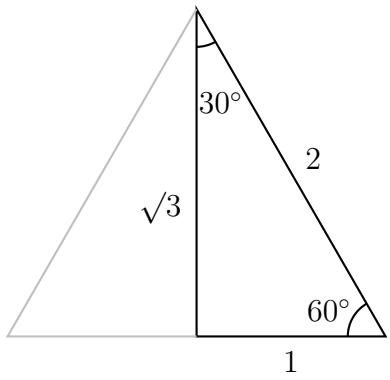
6. $2a + 3b = 9$
$4a + b = 13$

7. $2x + 7y = 17$
$5x + 3y = -1$

8. $5x + 3y = 23$
$2x + 4y = 12$

1.1 Exact values of sine, cosine and tangent

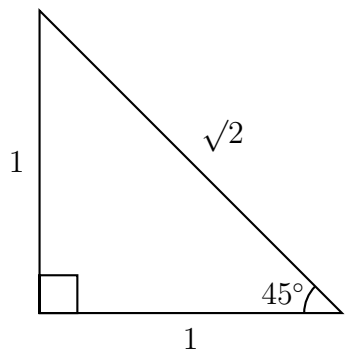
If we bisect an equilateral triangle of side 2:



then Pythagoras will give the height, $\sqrt{3}$, and the angles are 30° and 60° so

$$\sin 30^\circ = \frac{1}{2} = \cos 60^\circ$$
$$\sin 60^\circ = \frac{\sqrt{3}}{2} = \cos 30^\circ$$
$$\tan 30^\circ = \frac{1}{\sqrt{3}}, \quad \tan 60^\circ = \sqrt{3}$$

In a right isosceles triangle with equal sides of length 1,



Pythagoras gives that the hypotesuse is $\sqrt{2}$ and the equal angles must be 45° so

$$\sin 45^\circ = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2} = \cos 45^\circ$$
$$\tan 45^\circ = 1$$

You need to recognise these values in radians as well. The basic result to commit to memory is

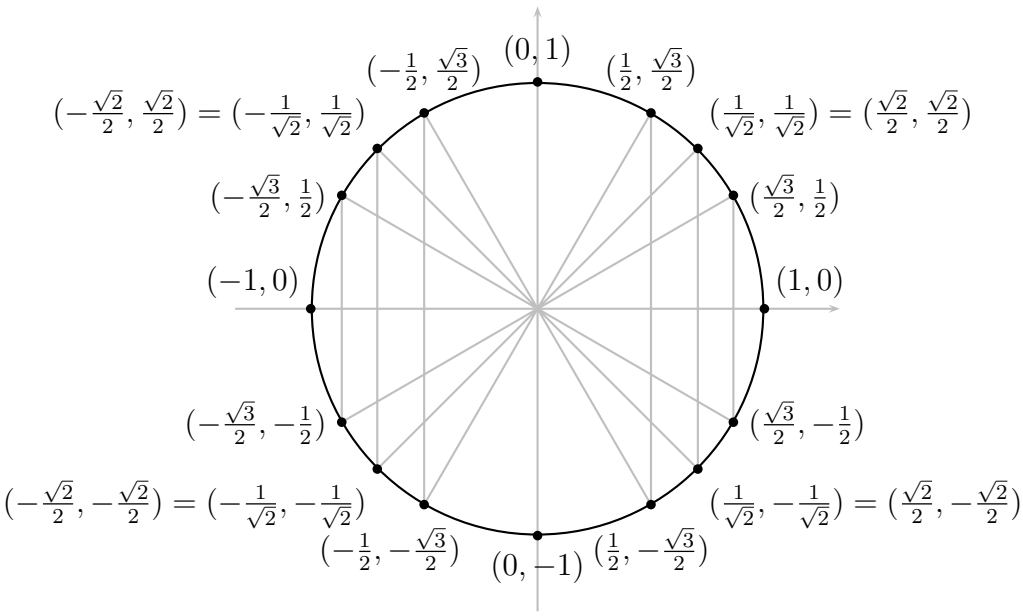
$$180^\circ = \pi \text{ radians}$$

You sometimes see the appreviation π rad or less often π^{c} where c stands for 'circular measure'. From this you can derive other results, the simplest being

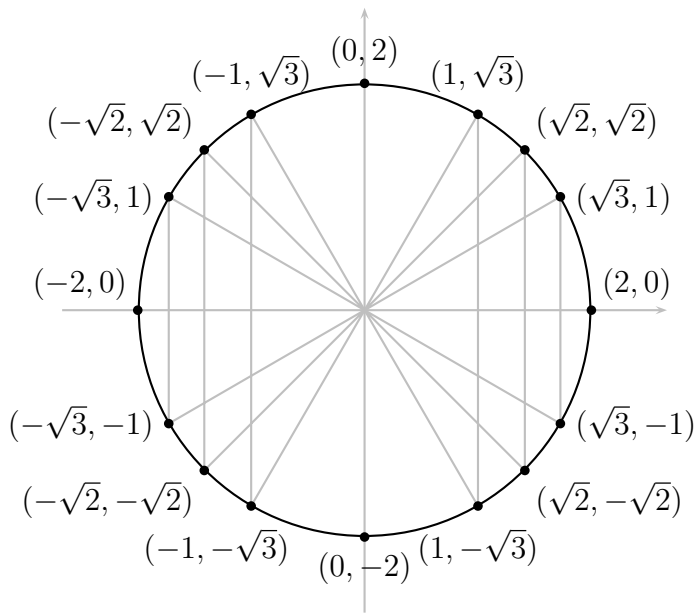
$$\frac{\pi}{2}\text{rad} = 90^\circ \quad \frac{\pi}{3}\text{rad} = 60^\circ \quad \frac{\pi}{4}\text{rad} = 45^\circ \quad \frac{\pi}{6}\text{rad} = 30^\circ.$$

It's generally clear from the question which angle unit is being used.

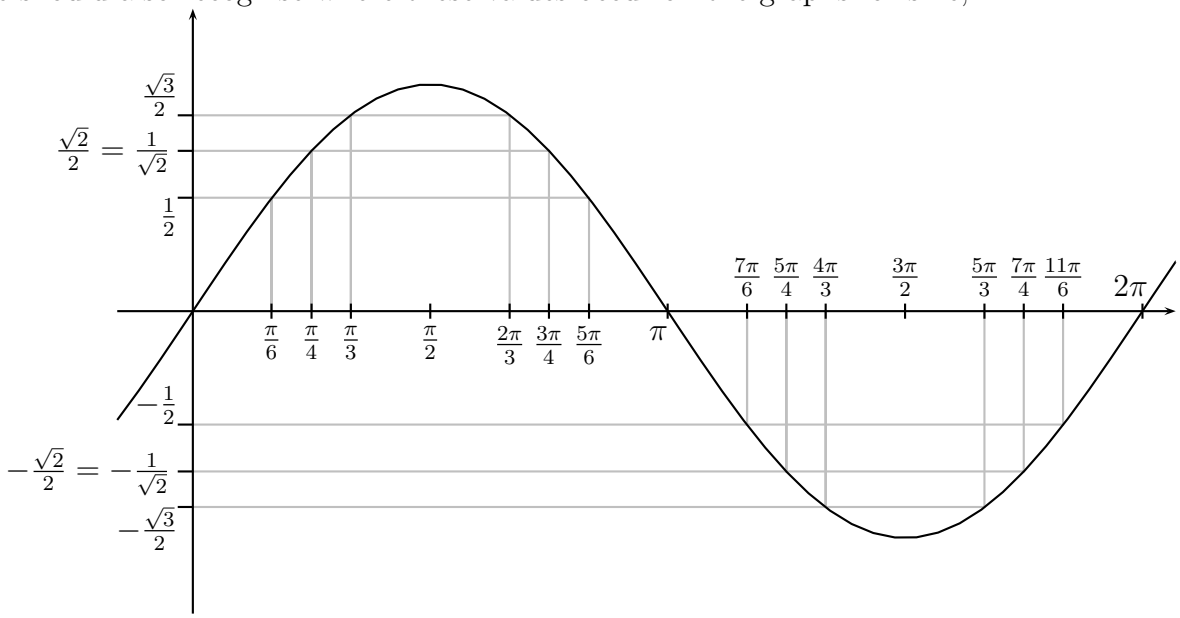
With practice we will come to recognise the situations where these values, and the triangles that genreate them, occur,



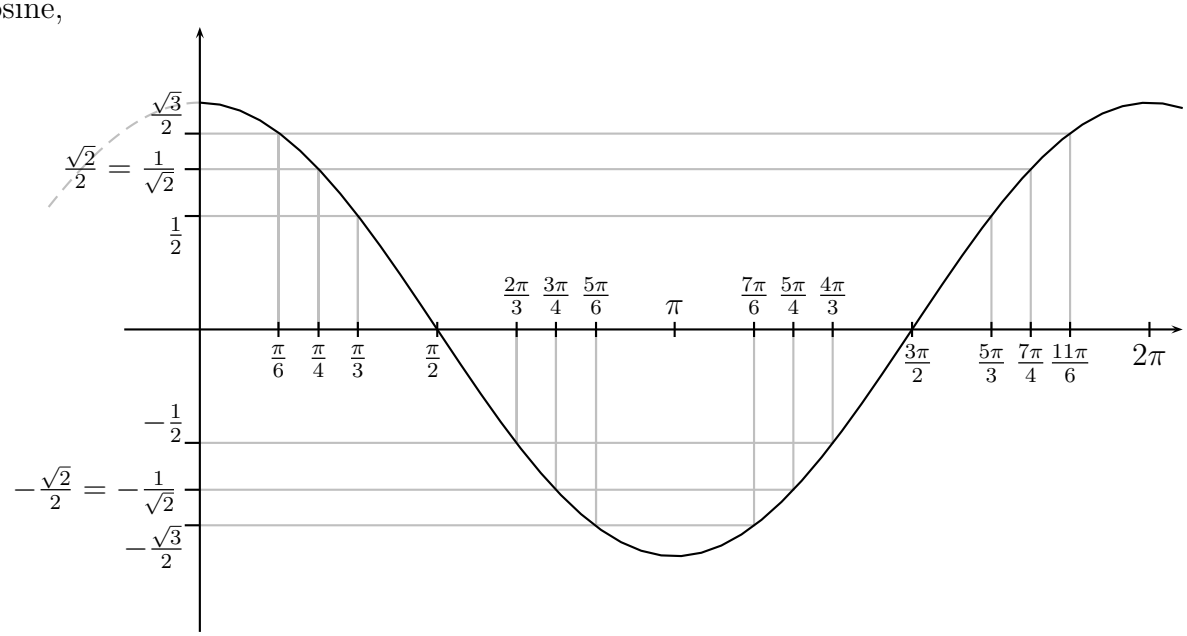
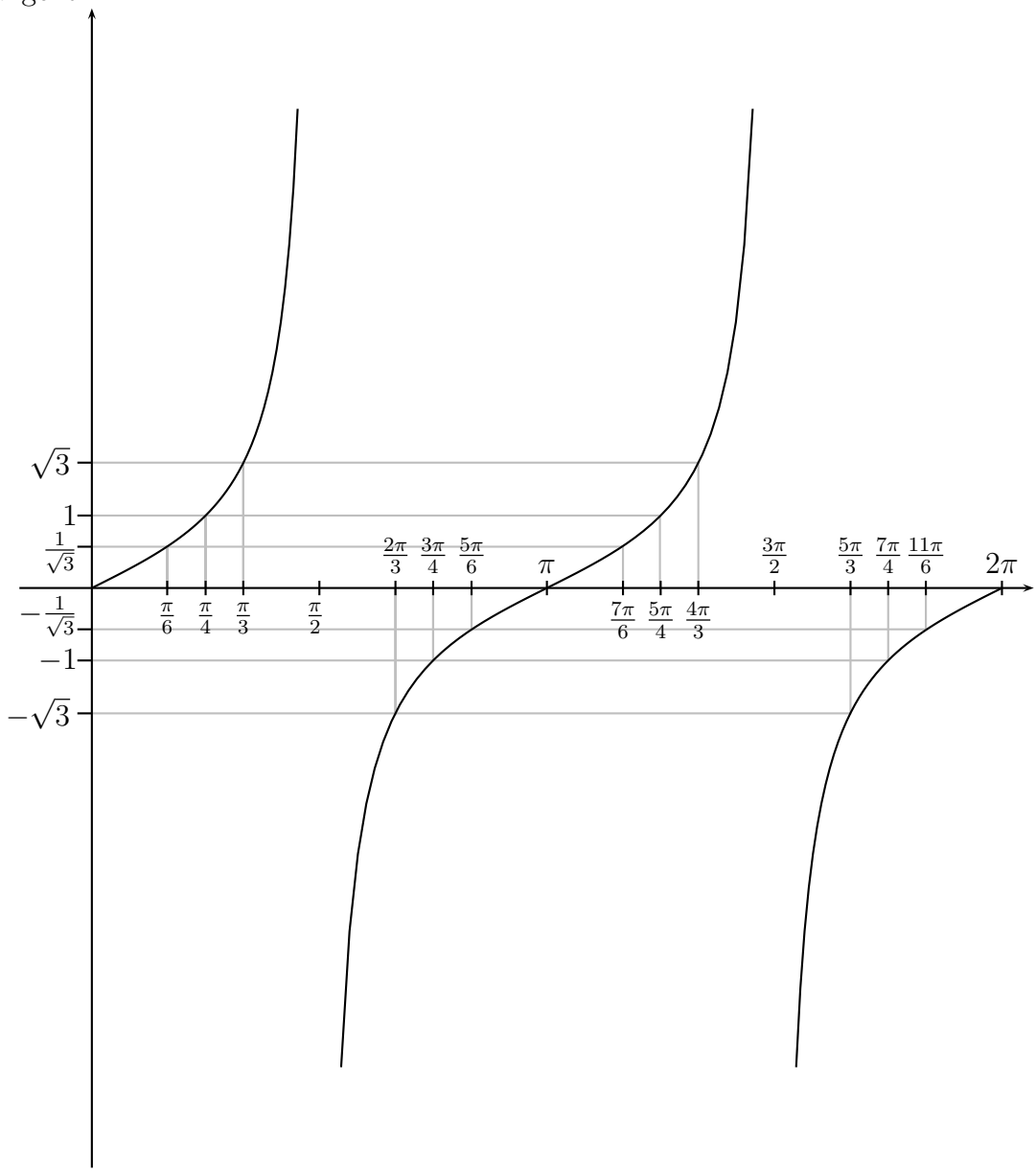
or notice scaled up versions of the same situation e.g.



We should also recognise where these values occur on the graphs for sine,



cosine,



and for tangent