You should be able to find the following, using just your mind (so without a calculator).
Helpful: draw yourself (enough of) the Unit Circle.

(1) Find y if

$$y = \sin\theta \quad \text{or} \quad y = \tan\theta \quad \text{or} \quad y = \sec\theta \quad \text{or}$$
$$y = \cos\theta \quad \text{or} \quad y = \cot\theta \quad \text{or} \quad y = \csc\theta$$

and θ is of the form

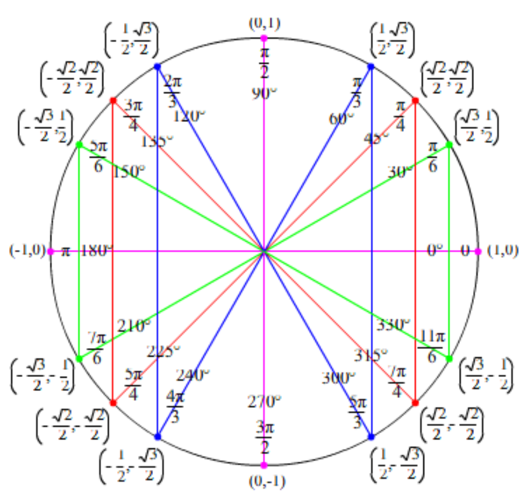
$$m\,\frac{\pi}{6} + 2\pi k \quad \text{or} \quad m\,\frac{\pi}{4} + 2\pi k \quad \text{or} \quad m\,\frac{\pi}{3} + 2\pi k \quad \text{or} \quad m\,\frac{\pi}{2} + 2\pi k$$

for some $m, k \in \{0, \pm 1, \pm 2, \pm 3, \dots\}$.

(2) Find θ (in radians) if

- $\theta = \arcsin u$ or $\theta = \arccos u$ and $u \in \left\{ 0 \, , \, \pm\frac{1}{2} \, , \, \pm\frac{1}{\sqrt{2}} \, , \, \pm\frac{\sqrt{3}}{2} \, , \, \pm 1 \right\}$
- $\theta = \arctan u$ or $\theta = \operatorname{arccot} u$ and $u \in \left\{ 0 \, , \, \pm\frac{1}{\sqrt{3}} \, , \, \pm 1 \, , \, \pm\sqrt{3} \right\}$
- $\theta = \operatorname{arcsec} u$ or $\theta = \operatorname{arccsc} u$ and $u \in \left\{ \pm 1 \, , \, \pm\frac{2}{\sqrt{3}} \, , \, \sqrt{2} \, , \, \pm 2 \right\}$.

Unit Circle – Know Me !!



Review of Inverse Trig Functions				
inverse trig function	**other notation**	**domain**	**range**	**memory trick**
$\theta = \arcsin u$	$\theta = \sin^{-1} u$	$-1 \le u \le 1$	$-\frac{\pi}{2} \le \theta \le \frac{\pi}{2}$	
$\theta = \arccos u$	$\theta = \cos^{-1} u$	$-1 \le u \le 1$	$0 \le \theta \le \pi$	
$\theta = \arctan u$	$\theta = \tan^{-1} u$	$-\infty < u < \infty$	$-\frac{\pi}{2} < \theta < \frac{\pi}{2}$	
$\theta = \operatorname{arccot} u$	$\theta = \cot^{-1} u$	$-\infty < u < \infty$	$0 < \theta < \pi$	
$\theta = \operatorname{arcsec} u$	$\theta = \sec^{-1} u$	$\lvert u \rvert \ge 1$	$0 \le \theta \le \pi \, , \; \theta \ne \frac{\pi}{2}$	
$\theta = \operatorname{arccsc} u$	$\theta = \csc^{-1} u$	$\lvert u \rvert \ge 1$	$-\frac{\pi}{2} \le \theta \le \frac{\pi}{2} \, , \; \theta \ne 0$	