ELEMENTARY TRIGONOMETRY EQUATIONS – WORKSHEET

COURSE/LEVEL

NSW Secondary High School Year 11 Preliminary Mathematics.
Syllabus reference: 5.1 – 5.2.

1. Solve the following equations for θ if $0° \le \theta < 360°$.

	I	II
(a)	$\sin\theta = 0$	$\tan\theta = 0$
(b)	$\sin\theta = 1$	$\tan\theta = 1$
(c)	$\cos\theta = \frac{1}{\sqrt{2}}$	$\sec\theta = \sqrt{2}$
(d)	$\sin\theta = -1$	$\tan\theta = -1$
(e)	$\tan\theta = -\sqrt{3}$	$\tan(\theta - 30°) = -\sqrt{3}$
(f)	$2\sin\theta = 1$	$\sqrt{3}\tan\theta - 1 = 0$
(g)	$\sin\theta = \cos\theta$	$\sin\theta = \sqrt{3}\cos\theta$
(h)	$\sin^2\theta = \frac{1}{2}$	$4\sin^2\theta = 1$
(i)	$\tan^2\theta - 3 = 0$	$9\sec^2\theta = 16$
(j)	$\sin\theta = \operatorname{cosec}\theta$	$3\tan\theta = \cot\theta$
(k)	$\tan 2\theta = \sqrt{3}$	$2\sin 2\theta - \sqrt{2} = 0$
(l)	$\sin 3\theta = \frac{1}{2}$	$\sin^2 2\theta = \frac{3}{4}$

2. (a) If $\sin\theta = \frac{3}{5}$ and $\cos\theta > 0$, find $\cos\theta$ and $\tan\theta$.

(b) If $\sin\theta = \frac{-4}{5}$ and $\cos\theta < 0$, find $\cos\theta$ and $\tan\theta$.

(c) If $\tan\theta = \frac{-5}{12}$ and $\sin\theta > 0$, find $\sin\theta$ and $\cos\theta$.

(d) If $\cos\theta = \frac{3}{4}$ and $\tan\theta < 0$, find the exact values of $\sin\theta$, $\tan\theta$ and $\operatorname{cosec}\theta$.

(e) If $\tan\theta = 3$ and $\sin\theta > 0$, find the exact value of $\sin\theta$.

3. Find the non-negative values of θ not greater than 360^0 that satisfy the following equations.

(a) $\cos^2\theta = \frac{1}{2}$ (b) $\sin^2\frac{x}{2} = \frac{1}{4}$

4. Solve these equations for θ if $0° \le \theta < 360°$.

(a) $\sin\theta = \frac{-\sqrt{3}}{2}$ (b) $\tan\frac{\theta}{2} = 2\sin\frac{\theta}{2}$