# AP Precalculus - M3Y & M3Z

## Trigonometry - Homework 1

1. Complete the table (without the use of a calculator):

| $\theta$ (°) | $\theta$ (rad) | $\sin\theta$ | $\cos\theta$ | $\tan\theta$ |
|---|---|---|---|---|
| 0 | | | | |
| 30 | | | | |
| 45 | | | | |
| 60 | | | | |
| 90 | | | | |
| 180 | | | | |
| | $\frac{3\pi}{2}$ | | | |
| 360 | | | | |
| | $5\pi$ | | | |
| 150 | | | | |
| | $\frac{4\pi}{3}$ | | | |
| -60 | | | | |
| | $\frac{5\pi}{6}$ | | | |
| | $\frac{5\pi}{2}$ | | | |

2. Find the period, frequency, and midline and amplitude (if they exist) of the following functions:

(i) $f(\theta) = -2\cos(7\theta)$

(ii) $g(\varphi) = 2\tan\left(-\frac{\varphi}{2} + 2\right)$

(iii) $k(y) = \frac{2}{7}\sin\left(\frac{3y}{2}\right) - 10$

(iv) $h(x) = 5\sin\left(\frac{2\pi x}{3}\right)$

(v) $p(x) = -\cot(8x - 1) - 6$

(vi) $h(x) = \frac{2}{3}\sin\left(\frac{-4x}{5} + 8\right) + 9$

3. Find the general solution of the equations:

(i) $2\sin x - 3 = -2$

(ii) $6\cos(x + \pi) = \sqrt{18}$

(iii) $1 - \tan\left(5x + \frac{2\pi}{5}\right) = 1$

(iv) $4\sin(2x - 1) + 2\sqrt{2} = 0$

(v) $-\sqrt{3}\cot\left(\frac{7\pi}{8} - 5x\right) = \sqrt{3}$

(vi) $\frac{5}{2}\cos\left(\frac{\pi x}{3}\right) = \frac{2}{5}$

4. Find the solutions of:

(i) The equation $2\sin x - 3 = -2$ in $[-\pi, \pi]$

(ii) The equation $6\cos(x + \pi) = \sqrt{18}$ in $\left(-\frac{3\pi}{2}, 3\pi\right)$

(iii) The equation $1 - \tan\left(5x + \dfrac{2\pi}{5}\right) = 1$ in $[-2\pi, 2\pi)$

(iv) The equation $4\sin(2x - 1) + 2\sqrt{2} = 0$ in $\left(-\frac{5\pi}{2}, \frac{\pi}{3}\right)$

(v) The equation $-\sqrt{3}\cot\left(\dfrac{7\pi}{8} - 5x\right) = \sqrt{3}$ in $[-\pi, \frac{3\pi}{2}]$

(vi) The equation $\dfrac{5}{2}\cos\left(\dfrac{\pi x}{3}\right) = \dfrac{2}{5}$ in $[-3, 6)$