

 1. Solve $\cos 2x^\circ + 2\sin x^\circ = 1$ for $0 \leq x < 360^\circ$


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 2. Solve $3 \cos 2x + \cos x = -1$ for $0 \leq x \leq 2\pi$.

5

 3. Find the values of t , where $0 < t < 2\pi$, for which $4\cos\left(2t - \frac{\pi}{4}\right)$ has its maximum value.

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 4. The acute angle θ is such that $\tan \theta = \frac{3}{4}$. Find the exact value of:

(a) $\sin 2\theta$

2

(b) $\sin 4\theta$

3



5. (a) Express $\sin 3x + \sqrt{3} \cos 3x$ in the form $k \cos(3x - a)$ where $k > 0$

and $0 \leq a \leq \frac{\pi}{2}$.

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(b) Hence solve the equation $\sin 3x + \sqrt{3} \cos 3x = 1$ for $0 \leq x \leq \frac{\pi}{2}$.

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Answers to Homework 8 - Trigonometry

1. $x = 0^\circ, 90^\circ, 180^\circ$

2. $x = \frac{\pi}{3}, \frac{5\pi}{3}$

3. $t = \frac{\pi}{8}, \frac{9\pi}{8}$

4(a) $\sin 2\theta = \frac{24}{25}$

4(b) $\sin 4\theta = \frac{336}{625}$

5(a) $2 \cos\left(3x - \frac{\pi}{6}\right)$

5(b) $x = \frac{\pi}{6}$