

Solutions

Each answer shows the steps, then the **result**.

2.1

- $\sec^2 \theta = 1 + \tan^2 \theta$

2.2

- $\sin 2\theta = 2 \sin \theta \cos \theta$

3.1 A

- $R = \sqrt{3^2 + 4^2} = 5$

3.2

- $R = \sqrt{5^2 + 12^2} = 13$; $\tan \alpha = \frac{12}{5} \Rightarrow \alpha = 67.4^\circ$; $13 \sin(\theta - 67.4^\circ)$

3.3

(a)

- common denominator: $\frac{(1 + \sin \theta) + (1 - \sin \theta)}{(1 - \sin \theta)(1 + \sin \theta)} = \frac{2}{1 - \sin^2 \theta} = \frac{2}{\cos^2 \theta} = 2 \sec^2 \theta$

(b)

- $2 \sec^2 \theta = 8 \Rightarrow \sec^2 \theta = 4 \Rightarrow \cos^2 \theta = \frac{1}{4} \Rightarrow \cos \theta = \pm \frac{1}{2}$; $\theta = 60^\circ$ or 120°