# 7.2) Using the angle addition formulae

| Worked example | Your turn |
| --- | --- |
| Using the trigonometric angle addition formulae find:<br>$\sin 75°$<br><br>$\tan 75°$ | Using the trigonometric angle addition formulae find:<br>$\cos 75°$<br>$\frac{\sqrt{6}-\sqrt{2}}{4}$ |

| Worked example | Your turn |
| --- | --- |
| Using the trigonometric angle addition formulae find:<br>$\sin 15°$<br><br>$\tan 15°$ | Using the trigonometric angle addition formulae find:<br>$\cos 15°$<br>$\frac{\sqrt{6}+\sqrt{2}}{4}$ |

## Worked example

Using the trigonometric angle addition formulae evaluate:

$$\sin 30° \cos 60° + \cos 30° \sin 60°$$

$$\cos 20° \cos 25° - \sin 20° \sin 25°$$

$$\frac{\tan \frac{\pi}{18} + \tan \frac{\pi}{9}}{1 - \tan \frac{\pi}{18} \tan \frac{\pi}{9}}$$

## Your turn

Using the trigonometric angle addition formulae evaluate:

$$\sin 60° \cos 30° - \cos 60° \sin 30°$$

$$\sin 30° = \frac{1}{2}$$

$$\cos 70° \cos 25° + \sin 70° \sin 25°$$

$$\cos 45° = \frac{\sqrt{2}}{2}$$

$$\frac{\tan \frac{13\pi}{36} - \tan \frac{\pi}{9}}{1 + \tan \frac{13\pi}{36} \tan \frac{\pi}{9}}$$

$$\tan \frac{\pi}{4} = 1$$

## Worked example

Given that:

$\sin A = \frac{8}{17}$ and $0° < A < 90°$, and

$\cos B = -\frac{4}{5}$, $B$ is obtuse,

find the value of $\cos(A + B)$

## Your turn

Given that:

$\sin A = -\frac{3}{5}$ and $180° < A < 270°$, and

$\cos B = -\frac{12}{13}$, $B$ is obtuse,

find the value of $\cos(A - B)$

$$\frac{33}{65}$$

## Worked example

Given that:

$\sin A = \frac{8}{17}$ and $0° < A < 90°$, and

$\cos B = -\frac{4}{5}$, $B$ is obtuse,

find the value of $\tan(A - B)$

## Your turn

Given that:

$\sin A = -\frac{3}{5}$ and $180° < A < 270°$, and

$\cos B = -\frac{12}{13}$, $B$ is obtuse,

find the value of $\tan(A + B)$

$$\frac{16}{63}$$

## Worked example

Given that:

$\sin A = \frac{8}{17}$ and $0° < A < 90°$, and

$\cos B = -\frac{4}{5}$, $B$ is obtuse,

find the value of $\sec(A - B)$

## Your turn

Given that:

$\sin A = -\frac{3}{5}$ and $180° < A < 270°$, and

$\cos B = -\frac{12}{13}$, $B$ is obtuse,

find the value of $\operatorname{cosec}(A + B)$

$$\frac{65}{16}$$

| Worked example | Your turn |
| --- | --- |
| Given that<br>$2\cos(x-40)^\circ = \sin(x-50)^\circ$<br>show that $\tan x = 3\tan 50^\circ$ | Given that<br>$2\cos(x+50)^\circ = \sin(x+40)^\circ$<br>show that $\tan x = \frac{1}{3}\tan 40^\circ$<br>Shown |