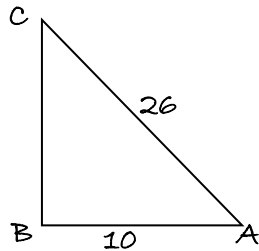


Section 1: Trigonometric functions and identities

Solutions to Exercise level 1

1.



$$(i) \quad BC^2 = AC^2 - AB^2 = 26^2 - 10^2 = 576$$

$$BC = 24 \text{ cm}$$

$$(ii) \quad \sin A = \frac{24}{26} = \frac{12}{13}$$

$$\cos A = \frac{10}{26} = \frac{5}{13}$$

$$\tan A = \frac{24}{10} = \frac{12}{5}$$

$$(iii) \quad \sin C = \frac{10}{26} = \frac{5}{13}$$

$$\cos C = \frac{24}{26} = \frac{12}{13}$$

$$\tan C = \frac{10}{24} = \frac{5}{12}$$

$$(iv) \quad \sin A = \cos C$$

$$\cos A = \sin C$$

$$\tan A = \frac{1}{\tan C}$$

(v) Since $C = 90^\circ - A$, this can be generalised to

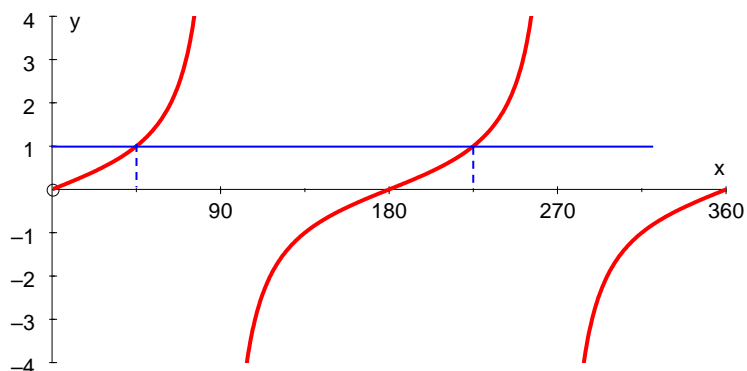
$$\sin x = \cos(90^\circ - x)$$

$$\cos x = \sin(90^\circ - x)$$

$$\tan x = \frac{1}{\tan(90^\circ - x)}$$

Edexcel AS Maths Trigonometry 1 Exercise solutions

2. (i)



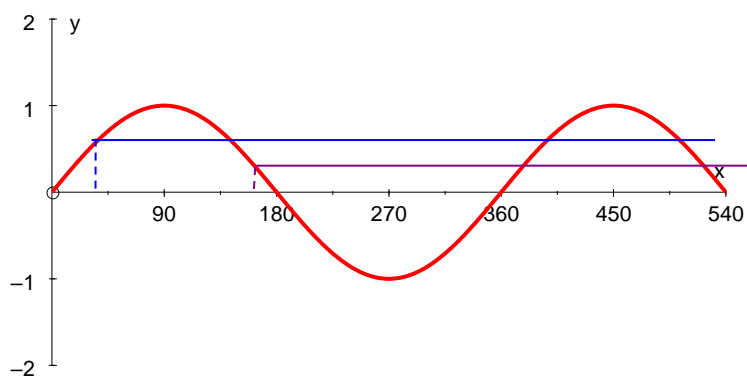
(ii) $\tan x = 1$

$$x = 45^\circ \text{ or } 180^\circ + 45^\circ$$

$$x = 45^\circ \text{ or } 225^\circ$$

(iii) By symmetry, angles are $180^\circ - 45^\circ = 135^\circ$
and $360^\circ - 45^\circ = 315^\circ$

3.



(i) $180^\circ - 40^\circ = 140^\circ$
 $360^\circ + 40^\circ = 400^\circ$
 $540^\circ - 40^\circ = 500^\circ$

(ii) $360^\circ + 20^\circ = 380^\circ$
 $540^\circ - 20^\circ = 520^\circ$

4. (i) $x = 360^\circ - 25^\circ = 335^\circ$

(ii) $x = 180^\circ - 50^\circ = 130^\circ$

(iii) $x = 180^\circ + 120^\circ = 300^\circ$

(iv) $x = 180^\circ + 60^\circ = 240^\circ$ and $x = 360^\circ - 60^\circ = 300^\circ$

(v) $x = 180^\circ - 20^\circ = 160^\circ$ and $x = 180^\circ + 20^\circ = 200^\circ$