

Name:

Level 2 Further Maths



Trigonometric Ratios

Corbettmaths

Ensure you have: Pencil or pen

### Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

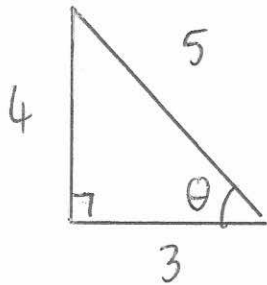
Revision for this topic

[www.corbettmaths.com/more/further-maths/](http://www.corbettmaths.com/more/further-maths/)



1. Angle  $\theta$  is obtuse and  $\sin\theta = \frac{4}{5}$   $\begin{matrix} \text{opp} \\ \text{hyp} \end{matrix}$

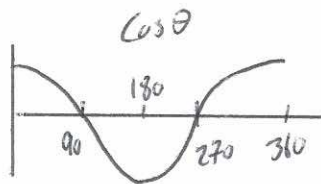
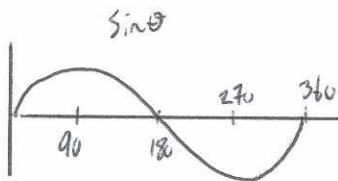
Work out the value of  $\cos\theta$



$$\cos\theta = \frac{A}{H}$$

$$\cos\theta = \frac{3}{5}$$

$\cos\theta$  is negative between  $90^\circ$  &  $180^\circ$

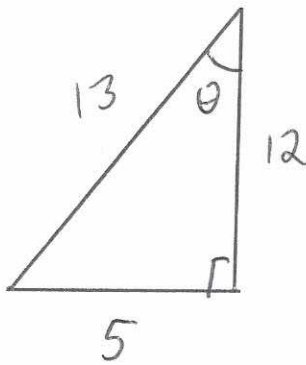


$$-\frac{3}{5}$$

(4)

2. Angle  $\theta$  is obtuse and  $\cos\theta = -\frac{12}{13}$   $\frac{A}{H}$

Work out the value of  $\sin\theta$



$$\sin\theta = \frac{5}{13}$$

$\sin\theta$  is positive between  $90^\circ$  &  $180^\circ$

$$\frac{5}{13}$$

(4)

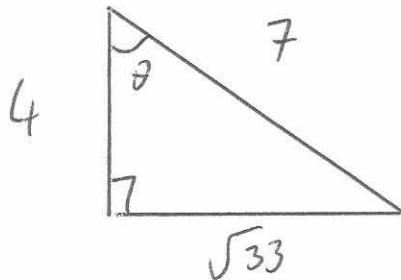
3. Angle  $\theta$  is obtuse and  $\sin\theta = \frac{\sqrt{33}}{7}$  O  
H

Work out the value of  $\cos\theta$

Pythagoras

$$7^2 - (\sqrt{33})^2 = 16$$

$$\sqrt{16} = 4$$



$$\cos\theta = \frac{4}{7}$$

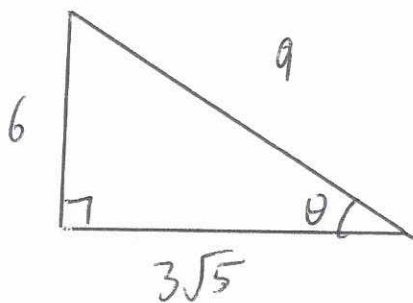
$\cos\theta$  is negative between  $90^\circ$  &  $180^\circ$

$$-\frac{4}{7}$$

(4)

4. Angle  $\theta$  is obtuse and  $\cos\theta = -\frac{3\sqrt{5}}{9}$  A  
H

Work out the value of  $\sin\theta$



$$9^2 - (3\sqrt{5})^2 = 36$$

$$\sqrt{36} = 6$$

$$\sin\theta = \frac{6}{9} = \frac{2}{3}$$

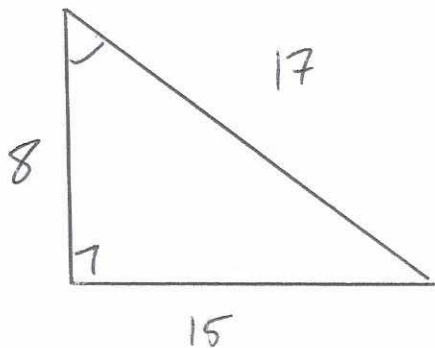
$\sin\theta$  is positive between  $90^\circ$  &  $180^\circ$

$$\frac{2}{3}$$

(4)

5. Given that  $\sin\theta = \frac{15}{17}$   $\frac{0}{17}$

Work out the **two** possible values of  $\cos\theta$



$$17^2 - 15^2 = 64$$

$$\sqrt{64} = 8$$

$$\frac{8}{17} \text{ or } -\frac{8}{17}$$

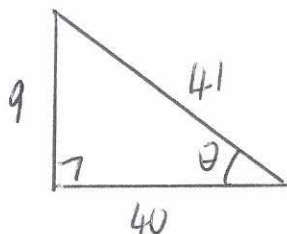

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(3)

6. Angle  $\theta$  is reflex and  $\cos\theta = \frac{40}{41}$   $\frac{A}{R}$

Work out the value of  $\sin\theta$

Not to scale



$$41^2 - 40^2 = 81$$

$$\sqrt{81} = 9$$

As  $\cos\theta$  is positive  
 Angle  $\theta$  is between  $270^\circ$  &  $360^\circ$   
 (see graphs on Q1)

As angles between  $180^\circ$  &  $360^\circ$   
 give negative values for  $\sin\theta$

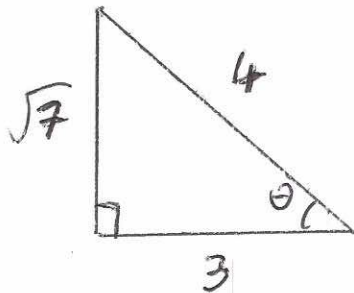
$$-\frac{9}{41}$$


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(4)

7. Angle  $\theta$  is reflex and  $\cos\theta = \frac{3}{4}$  A  
H

(a) Work out the value of  $\sin\theta$



Since  $\cos\theta$  is positive &  $\theta$  is reflex,  
 $\theta$  is between  $270^\circ$  and  $360^\circ$

$$4^2 - 3^2 = 7$$

$$\sqrt{7}$$

$$\sin\theta = \frac{\sqrt{7}}{4}$$

$\sin\theta$  is negative when  $\theta$  is reflex:

$$-\frac{\sqrt{7}}{4}$$


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(3)

(b) Work out the value of  $\tan\theta$

$$\tan\theta = \frac{\sqrt{7}}{3}$$

$\tan\theta$  is negative between  $270^\circ$  &  $310^\circ$

$$-\frac{\sqrt{7}}{3}$$

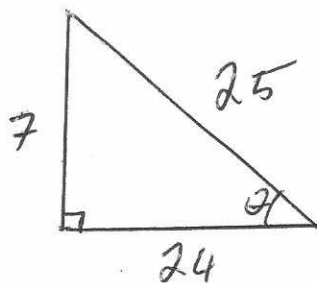

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(2)

8. Given  $\tan\theta = -\frac{7}{24}$  and  $\theta$  is reflex

(a) Work out the value of  $\sin\theta$

Since  $\theta$  is reflex &  $\tan\theta$  is negative  
 $\theta$  is between  $270^\circ$  &  $360^\circ$



$$-\frac{7}{25}$$

(2)

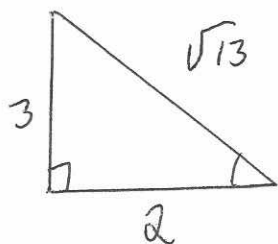
(b) Work out the value of  $\cos\theta$

$$\frac{24}{25}$$

(2)

9. Given  $\tan\theta = \frac{3}{2}$  and  $\theta$  is reflex

(a) Work out the value of  $\sin\theta$



(b) Work out the value of  $\cos\theta$

Since  $\tan\theta$  is positive,  
 $\theta$  is between  $180^\circ$  and  $270^\circ$

$\sin\theta$  -ve

$\cos\theta$  -ve

$$-\frac{3}{\sqrt{13}} \text{ or } -\frac{3\sqrt{13}}{13}$$

(2)

$$-\frac{2}{\sqrt{13}} \text{ or } -\frac{2\sqrt{13}}{13}$$

(2)