

/5K

/13T

/6A

1. Calculate the ratios: __2A

a) $\cos 120^\circ$

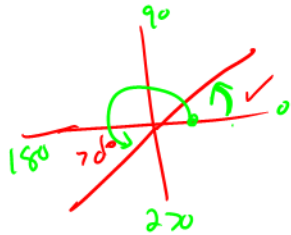
$$= -\frac{1}{2}$$

b) $\csc 75^\circ$

$$= \frac{1}{\sin 75^\circ} = 1.0353$$

2. Calculate the TWO angles that satisfy the following ratio. Draw a sketch first. __6A

a) $\tan \theta = 2.8094$



$$\theta = \tan^{-1}(2.8094)$$

$$\theta = 70.4^\circ$$

$$\theta = 180 + 70.4$$
$$= 250.4^\circ$$

S	A
+	+
C	

b) $\sec \theta = -3.2216$

$$\frac{1}{\cos \theta} = -3.2216$$

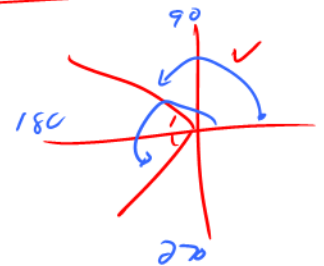
$$\cos \theta = -\frac{1}{3.2216}$$

$$\theta = \cos^{-1}\left(-\frac{1}{3.2216}\right)$$

$$\theta = 108^\circ$$

$$\theta = 360 - 108$$

$$\theta = 252^\circ$$

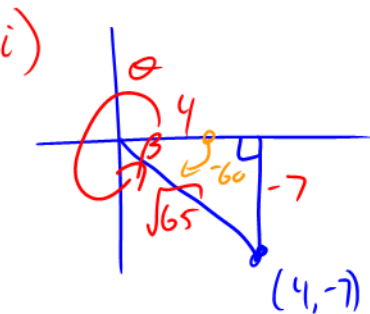


3. Given point P(4,-7):

i) Draw the sketch, labelling x and y __1T

ii) Calculate r, labeling it on the sketch __1T

iii) State the three trigonometric ratios __3T

iv) Calculate the principal angle (θ) and the related acute angle (β) __2T

$$4^2 + (-7)^2 = r^2$$

$$16 + 49 = r^2$$

$$\sqrt{65} = r$$

$$\sin \theta = \frac{-7}{\sqrt{65}}$$

$$\cos \theta = \frac{4}{\sqrt{65}}$$

$$\tan \theta = \frac{-7}{4}$$

$$\tan \theta = \frac{-7}{4}$$

$$\theta = \tan^{-1}\left(\frac{-7}{4}\right)$$

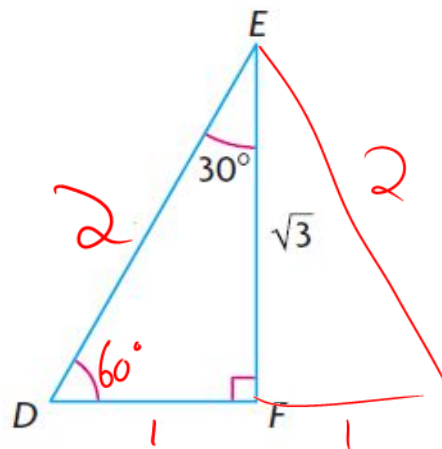
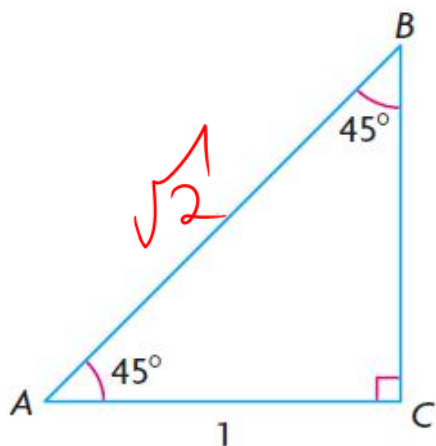
$$\theta = -60^\circ$$

$$\therefore \beta = 60^\circ$$

$$\therefore \theta = 360 - 60$$

$$\theta = 300$$

4. Fill in the eleven missing pieces on the triangles and in the chart: __5K



θ	$\sin \theta$	$\cos \theta$	$\tan \theta$
30°	$\frac{1}{2} = 0.5$	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$
45°	$\frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$	$\frac{\sqrt{2}}{2} \doteq 0.7071$	1
60°	$\frac{\sqrt{3}}{2}$	$\frac{1}{2} = 0.5$	$\sqrt{3} \doteq 1.7321$

5. Use the above chart to work out the following using EXACT ratios. (meaning no calculators) __6T

a) $2 \cos 45 \times \sin 45$

$$\begin{aligned}
 &= 2 \left(\frac{\sqrt{2}}{2} \right) \left(\frac{\sqrt{2}}{2} \right) \\
 &= 2 \left(\frac{2}{4} \right) \\
 &= 2 \left(\frac{1}{2} \right) \\
 &= 1
 \end{aligned}$$

b) $\sec^2 30 - \tan^2 30$

$$\begin{aligned}
 &= \left(\frac{2}{\sqrt{3}} \right)^2 - \left(\frac{\sqrt{3}}{3} \right)^2 \\
 &= \frac{4}{3} - \frac{3}{9} \\
 &= \frac{4}{3} - \frac{1}{3} \\
 &= \frac{3}{3} = 1
 \end{aligned}$$

$$\boxed{\sec^2 \theta - \tan^2 \theta = 1}$$

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