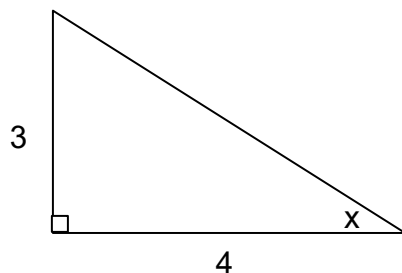
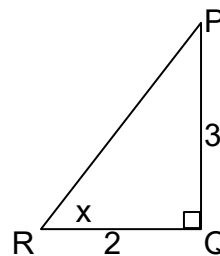


Addition Formulae Applications

1. Using the triangle shown opposite, show that the exact value of $\cos 2x$ is $\frac{7}{25}$



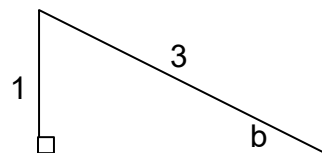
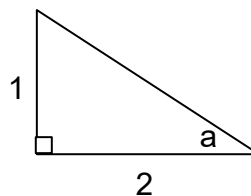
2. Using triangle PQR, find the exact value of $\sin 2x$.



3. Given $\tan x = \frac{5}{12}$, find the exact value of $\cos 2x$.
4. Given $\sin x = \frac{2}{\sqrt{5}}$, find the exact value of
- (a) $\sin 2x$
 - (b) $\cos 2x$
 - (c) $\tan 2x$
5. Given $\sin x = \frac{1}{3}$
- (a) Show that (i) $\cos 2x = \frac{7}{9}$ (ii) $\sin 2x = \frac{4\sqrt{2}}{9}$
 - (b) By writing $\sin 4x$ as $\sin 2(2x)$, find the exact value of $\sin 4x$

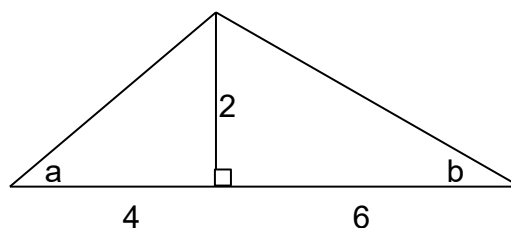
6. Using the triangles opposite show that

$$\sin(a - b) = \frac{2\sqrt{2} - 2}{3\sqrt{5}}$$



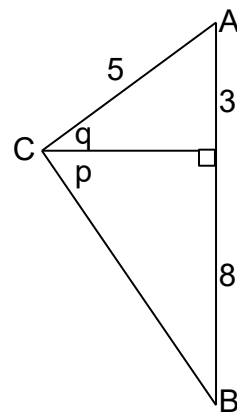
7. Using the diagram shown show that

$$\sin(a + b) = \frac{1}{\sqrt{2}}$$



8. The diagram shows triangle ABC.
Find the exact value of

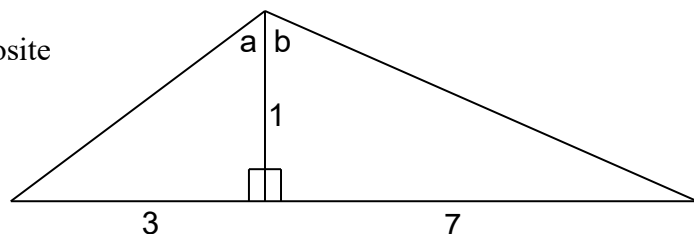
- (a) $\sin \angle ACB$
(b) $\cos \angle ACB$
(c) $\tan \angle ACB$



9. Given $\cos x = \frac{2}{3}$

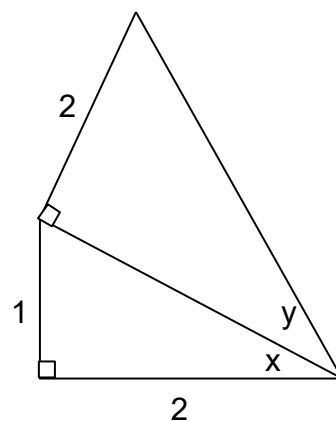
- (a) Show that (i) $\sin 2x = \frac{4\sqrt{5}}{9}$ (ii) $\cos 2x = -\frac{1}{9}$
(b) Hence, or otherwise, find the value of $\tan 2x$.

10. Given the information in the diagram opposite find the exact value of $\cos(a + b)$.



11. Using the information opposite show that

the exact value of $\cos(x + y)$ is $\frac{2\sqrt{5} - 2}{3\sqrt{5}}$



12. In the diagram $\angle DEC = \angle CEB = x^\circ$
 $CD = 1$ unit and $DE = \sqrt{2}$ units.

Find the exact value of $\cos \angle DEA$.

