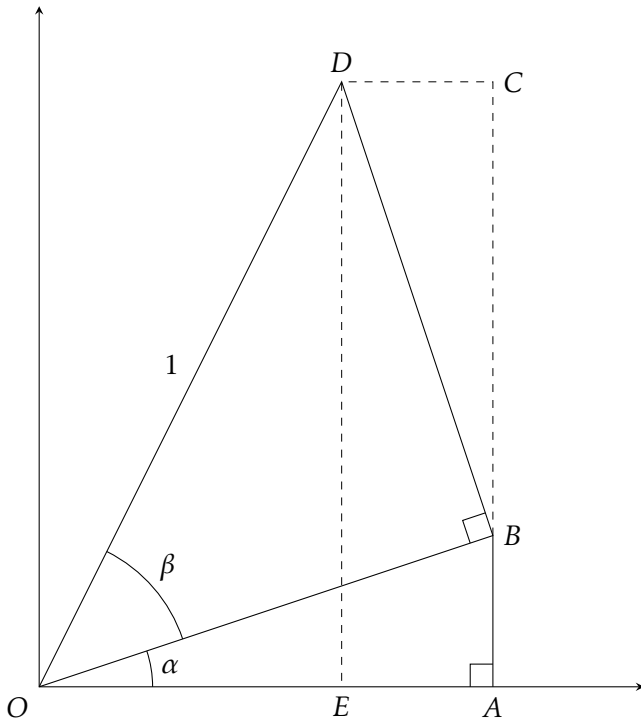


Quiz 1

Name: _____

Question 1. — Complete the information in the diagram below using only trigonometric functions, addition and multiplication (squaring is ok, for it is merely abbreviated multiplication). You should treat the displayed answer blanks in Question 3, and the last answer blank in Question 4, as fraction lines (*i.e.*, you should enter the numerator above the line and the denominator below the line).



$|OD| = 1$

$|OB| = \cos \beta$

$|BD| = \sin \beta$

$|OA| = (\cos \alpha) \cdot |OB| = \cos \alpha \cos \beta$

$|AB| = \underline{\hspace{10em}}$

$\angle CBD = \underline{\hspace{10em}}$

$|BC| = \underline{\hspace{10em}}$

$|EA| = |CD| = \underline{\hspace{10em}}$

Question 2. — Express $\sin(\alpha + \beta)$ and $\cos(\alpha + \beta)$ in terms of $\cos \alpha$, $\cos \beta$, $\sin \alpha$ and $\sin \beta$.

$\sin(\alpha + \beta) = |AB| + |BC| = \underline{\hspace{10em}}$

$\cos(\alpha + \beta) = |OA| - |EA| = \underline{\hspace{10em}}$

Question 3. — Express $\tan(\alpha + \beta)$ in terms of $\sin \alpha$, $\sin \beta$, $\cos \alpha$ and $\cos \beta$.

$\tan(\alpha + \beta) = \frac{\sin(\alpha + \beta)}{\cos(\alpha + \beta)} = \underline{\hspace{10em}}.$

Dividing the numerator and denominator of the preceding expression by _____, yields the following expression for $\tan(\alpha + \beta)$ in terms of $\tan \alpha$ and $\tan \beta$

$\tan(\alpha + \beta) = \underline{\hspace{10em}}.$

Question 4. — Express $\cos(2\vartheta)$ in terms of $\cos \vartheta$. Express $\sec(2\vartheta)$ in terms of $\sec \vartheta$ and then in terms of $\tan \vartheta$:

$\cos(2\vartheta) = \underline{\hspace{10em}}.$

$\sec(2\vartheta) = \frac{1}{\cos(2\vartheta)} = \underline{\hspace{10em}} = \underline{\hspace{10em}}.$
