

$$\begin{array}{ll}
 \textcircled{13} \quad \textcircled{a} \quad \textcircled{i} & AC^2 = (\sqrt{5})^2 - 1^2 & AD^2 = (\sqrt{10})^2 - 1^2 \\
 & = 5 - 1 & = 10 - 1 \\
 & = 4 & = 9 \\
 & AC = 2 & AD = 3
 \end{array}$$

$$\cos p = \frac{2}{\sqrt{5}}$$

$$\cos q = \frac{3}{\sqrt{10}}$$

$$\textcircled{b} \quad \sin(p+q) = \sin p \cos q + \cos p \sin q$$

$$= \left(\frac{1}{\sqrt{5}} \times \frac{3}{\sqrt{10}} \right) + \left(\frac{2}{\sqrt{5}} \times \frac{1}{\sqrt{10}} \right)$$

$$= \frac{3}{\sqrt{50}} + \frac{2}{\sqrt{50}}$$

$$= \frac{5}{\sqrt{50}}$$

$$= \frac{5}{\sqrt{25} \sqrt{2}}$$

$$= \frac{5}{5\sqrt{2}} = \frac{1}{\sqrt{2}}$$

$$\begin{aligned}
 \textcircled{13} \quad \textcircled{a} \quad \textcircled{i} \quad AC^2 &= (\sqrt{5})^2 - 1^2 & AD^2 &= (\sqrt{10})^2 - 1^2 \\
 &= 5 - 1 & &= 10 - 1 \\
 &= 4 & &= 9 \\
 AC &= 2 & AD &= 3
 \end{aligned}$$

$$\cos p = \frac{2}{\sqrt{5}} \qquad \cos q = \frac{3}{\sqrt{10}}$$

$$\begin{aligned}
 \textcircled{b} \quad \sin(p+q) &= \sin p \cos q + \cos p \sin q \\
 &= \left(\frac{1}{\sqrt{5}} \times \frac{3}{\sqrt{10}} \right) + \left(\frac{2}{\sqrt{5}} \times \frac{1}{\sqrt{10}} \right) \\
 &= \frac{3}{\sqrt{50}} + \frac{2}{\sqrt{50}} \\
 &= \frac{5}{\sqrt{50}} \\
 &= \frac{5}{\sqrt{25} \sqrt{2}} \\
 &= \frac{5}{5\sqrt{2}} = \frac{1}{\sqrt{2}}
 \end{aligned}$$