

$$\begin{aligned}
 5. \quad & \sin \frac{7\pi}{15} \cos \frac{\pi}{5} + \cos \frac{7\pi}{15} \sin \frac{\pi}{5} \\
 & \downarrow \sin(\alpha + \beta) \\
 & = \sin\left(\frac{7\pi}{15} + \frac{\pi}{5}\right) \\
 & = \sin\left(\frac{7\pi}{15} + \frac{3\pi}{15}\right) \\
 & = \sin\left(\frac{10\pi}{15}\right) \\
 & = \sin \frac{2\pi}{3} \\
 & = \left(\frac{\sqrt{3}}{2}\right)
 \end{aligned}$$

$$6. \quad \cos \alpha = \frac{\sqrt{7}}{9} \quad \uparrow \circ$$

ALPHA SIDE

$$\cos \alpha = \frac{\sqrt{7}}{9} \text{ AND } \cos = \frac{x}{r}$$

$$\text{So } x = \sqrt{7}, r = 9$$

$$x^2 + y^2 = r^2$$

$$(\sqrt{7})^2 + y^2 = 9^2$$

$$7 + y^2 = 81$$

$$y^2 = 81 - 7$$

$$y^2 = 74$$

$$y = \pm \sqrt{74}$$

$$y = \sqrt{74}$$

$$\sin \alpha = \frac{y}{r} = \frac{\sqrt{74}}{9}$$

$$\tan \alpha = \frac{y}{x} = \frac{\sqrt{74}}{\sqrt{7}}$$

$$= \frac{\sqrt{518}}{7}$$

$$\sin \beta = \frac{-2}{3} \quad \uparrow \circ$$

BETA SIDE

$$\sin \beta = \frac{-2}{3} \text{ AND } \sin = \frac{y}{r}$$

$$\text{So } y = -2, r = 3$$

$$x^2 + y^2 = r^2$$

$$x^2 + (-2)^2 = 3^2$$

$$x^2 + 4 = 9$$

$$x^2 = 9 - 4$$

$$x^2 = 5$$

$$x = \pm \sqrt{5}$$

$$x = \sqrt{5}$$

$$\cos \beta = \frac{x}{r} = \frac{\sqrt{5}}{3}$$

$$\tan \beta = \frac{y}{x} = \frac{-2}{\sqrt{5}} = \frac{-2\sqrt{5}}{5}$$