

25) a) $\sin(\alpha + \beta)$

$$\cos \alpha = -\sqrt{1 - \sin^2 \alpha} = \sqrt{1 - (4/13)^2} = -\sqrt{25/169} = -5/13$$

$$\sin \beta = -\sqrt{1 - (-3/5)^2} = -\sqrt{16/25} = -4/5$$

$$12/13 \cdot -3/5 + -5/13 \cdot -4/5$$

$$-36/65 + 4/13 = -36/65 + 20/65 = \boxed{-16/65}$$

b) $\cos(\alpha + \beta)$

$$-5/13 \cdot -3/5 - 12/13 \cdot -4/5$$

$$15/65 = 3/13 + 48/65$$

$$\boxed{63/65}$$

29) $\sin \theta = 1/5$

a) $\cos \theta = \sqrt{1 - \sin^2 \theta}$
 $\sqrt{24/25} = 2\sqrt{6}/5$

$$\boxed{2\sqrt{6}/5}$$

b) $\sin 2\theta = \sin(\theta + \theta)$

$$2 \cdot 1/5 \cdot 2\sqrt{6}/5 =$$

$$\boxed{4\sqrt{6}/25}$$

49) $\frac{\sin(s+t)}{\cos s \cos t} = \tan s + \tan t$

$$\frac{\sin s \cos t + \cos s \sin t}{\cos s \cos t}$$

$$\frac{\sin s}{\cos s} + \frac{\sin t}{\cos t} = \tan s + \tan t$$

$$\boxed{\tan s + \tan t = \tan s + \tan t}$$