

## Answers to Unit Circle Practice

1) 1

2)  $-\frac{\sqrt{3}}{3}$

3)  $-\frac{\sqrt{2}}{2}$

4)  $-\frac{\sqrt{2}}{2}$

5)  $-\frac{1}{2}$

6)  $-\sqrt{3}$

7) 0

8)  $\frac{1}{2}$

9) -1

10)  $-\frac{\sqrt{3}}{2}$

11)  $-\sqrt{2}$

12) -2

13)  $-\sqrt{3}$

14)  $-\frac{2\sqrt{3}}{3}$

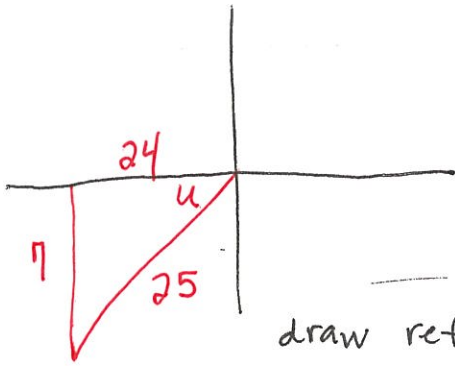
15)  $-\frac{\sqrt{3}}{3}$

16) Undefined

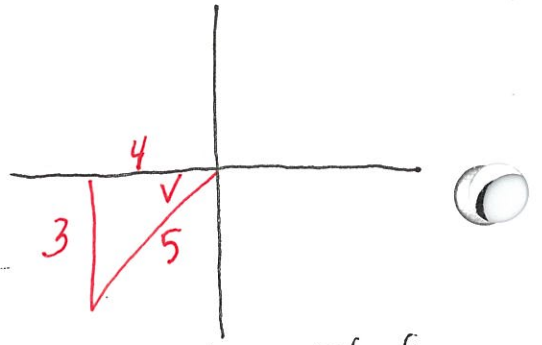
For Exercises 47-50:

$$\sin u = -\frac{7}{25} \text{ and } u \text{ is in Quadrant III.}$$

$$\cos v = -\frac{4}{5} \text{ and } v \text{ is in Quadrant III.}$$



draw ref. for angle  $u$



draw ref. for angle  $v$

47.  $\tan(u+v) =$

$$\boxed{\frac{4}{3}}$$

$$\frac{\tan u + \tan v}{1 - \tan u \tan v} = \frac{\frac{7}{24} + \frac{3}{4} \frac{18}{24}}{1 - (\frac{7}{24})(\frac{3}{4})} = \frac{\frac{25}{24}}{\frac{96}{96} - \frac{21}{96}} = \frac{\frac{25}{24}}{\frac{75}{96}}$$

$$= \frac{25}{24} \times \frac{96}{75} = \frac{4}{3}$$

48.  $\cos(u+v) =$

$$\boxed{\frac{3}{5}}$$

$$\cos u \cos v - \sin u \sin v = \left(-\frac{24}{25}\right)\left(-\frac{4}{5}\right) - \left(-\frac{7}{25}\right)\left(-\frac{3}{5}\right) = \frac{96}{125} - \frac{21}{125} = \frac{75}{125} = \boxed{\frac{3}{5}}$$

49.  $\sin(v-u) =$

$$\boxed{\frac{44}{125}}$$

$$\sin v \cos u - \cos v \sin u$$

$$\left(-\frac{3}{5}\right)\left(-\frac{24}{25}\right) - \left(-\frac{4}{5}\right)\left(-\frac{7}{25}\right) = \frac{72}{125} - \frac{28}{125} = \boxed{\frac{44}{125}}$$

50.  $\cos(u-v) =$

$$\boxed{\frac{117}{125}}$$

$$\cos u \cos v + \sin u \sin v$$

$$\left(-\frac{24}{25}\right)\left(-\frac{4}{5}\right) + \left(-\frac{7}{25}\right)\left(-\frac{3}{5}\right) = \frac{96}{125} + \frac{21}{125} = \boxed{\frac{117}{125}}$$