

$$15) \tan(87^\circ) = \cot(90^\circ - 87^\circ) = \cot(3^\circ)$$

(6)

$$17) \cos\left(\frac{\pi}{12}\right) = \sin\left(\frac{\pi}{2} - \frac{\pi}{12}\right) = \sin\left(\frac{6\pi}{12} - \frac{\pi}{12}\right) = \sin\left(\frac{5\pi}{12}\right)$$

$$19) \csc(-14^\circ 24') = \sec(90^\circ - (-14^\circ 24')) \\ = \sec(104^\circ 24')$$

$$33) \tan(\theta) = \tan(90^\circ - (45^\circ + 2\theta))$$

$$\Rightarrow \theta = 90^\circ - (45^\circ + 2\theta)$$

$$\Rightarrow \theta = 45^\circ + 2\theta$$

$$\Rightarrow \boxed{-45^\circ = \theta}$$

$$35) \sec \theta = \csc\left(\frac{\theta}{2} + 20^\circ\right) \\ = \sec(90^\circ - (\frac{\theta}{2} + 20^\circ))$$

$$\Rightarrow \theta = 90^\circ - (\frac{\theta}{2} + 20^\circ) \Rightarrow \frac{3\theta}{2} = 110^\circ \Rightarrow \theta = \frac{220^\circ}{3}$$

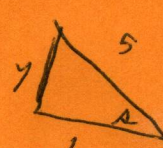
$$37) \sin(3\theta - 15^\circ) = \sin(90^\circ - (\theta + 25^\circ))$$

$$\Rightarrow 3\theta - 15^\circ = 90^\circ - (\theta + 25^\circ)$$

$$\Rightarrow 3\theta - 15^\circ = 65^\circ - \theta$$

$$\Rightarrow 4\theta = 80^\circ$$

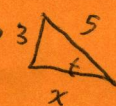
$$\Rightarrow \theta = 20^\circ$$

$$47) \cos A = \frac{1}{5} \rightarrow$$


$$\rightarrow 1^2 + y^2 = 5^2$$

$$\rightarrow y = \sqrt{24}$$

$$\rightarrow \sin(A) = \frac{\sqrt{24}}{5} = \frac{\sqrt{24}}{5}$$

$$\sin(t) = \frac{3}{5} \rightarrow$$


$$\rightarrow x^2 + 9 = 25$$

$$\rightarrow x = \sqrt{16} = 4$$

$$\rightarrow \cos(t) = \frac{4}{5}$$

$$\text{So, } \cos(s+t) = \cos(A)\cos(t) - \sin(A)\sin(t) \\ = \left(-\frac{1}{5}\right)\left(\frac{4}{5}\right) - \left(\frac{\sqrt{24}}{5}\right)\left(\frac{3}{5}\right) \\ = \frac{4}{25} - \frac{3\sqrt{24}}{25}$$

$$\cos(s-t) = \cos(A)\cos(t) + \sin(A)\sin(t)$$