

Chapter 7 Spiral Review solutions

1) 0                      2)  $\pi/6$

3)  $\pi/4$                     4)  $\pi$

5)  $5\pi/6$

6)  $-\pi/6$

7)  $-\pi/4$

8)  $-\frac{8}{11}$

9)  $-\pi/6$

10)  $-7/10$

11)  $\frac{\sqrt{2}}{2}$

12)  $\frac{\sqrt{77}}{9}$

13)  $3\pi/4$

14)  $\frac{\sqrt{33}}{4}$

$$15) \frac{\sqrt{u^2+1}}{u^2+1} = \frac{1}{\sqrt{u^2+1}}$$

$$16) \frac{u\sqrt{1-u^2}}{1-u^2} = \frac{u}{\sqrt{1-u^2}}$$

17)  $\left\{ \frac{\pi}{6}, \frac{5\pi}{6} \right\}$

18)  $\left\{ \frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6} \right\}$

19)  $\left\{ \frac{5\pi}{6}, \frac{7\pi}{6} \right\}$

20)  $\left\{ \frac{7\pi}{6}, \frac{11\pi}{6} \right\}$

21)  $\left\{ 0, \pi, \frac{3\pi}{2} \right\}$

22)  $\left\{ \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4} \right\}$

$$23) \tan \theta \cdot \csc \theta = \frac{\sin \theta}{\cos \theta} \cdot \frac{1}{\sin \theta} = \frac{1}{\cos \theta} = \sec \theta$$

$$24) \tan u(\csc u - \sin u) = \tan u \cdot \csc u - \tan u \cdot \sin u = \frac{\sin u}{\cos u} \cdot \frac{1}{\sin u} - \frac{\sin u}{\cos u} \cdot \sin u = \frac{1}{\cos u} - \frac{\sin^2 u}{\cos u} = \frac{1 - \sin^2 u}{\cos u} = \frac{\cos^2 u}{\cos u} = \cos u$$

$$25) \cot^2 x = \csc^2 x - 1 = (\csc x - 1)(\csc x + 1).$$

$$26) \csc u - \sin u = \frac{1}{\sin u} - \sin u = \frac{1 - \sin^2 u}{\sin u} = \frac{\cos^2 u}{\sin u} = \cos u \cot u$$

$$27) \frac{1 - \sin t}{\cos t} = \left( \frac{1 + \sin t}{1 + \sin t} \right) \left( \frac{1 - \sin t}{\cos t} \right) = \frac{\cos^2 t}{\cos t(1 + \sin t)} = \frac{\cos t}{1 + \sin t}$$

$$28) \frac{\sqrt{2}(\sqrt{3}-1)}{4} = \frac{\sqrt{6}-\sqrt{2}}{4}$$

$$29) \frac{\sqrt{2}(\sqrt{3}-1)}{4} = \frac{\sqrt{6}-\sqrt{2}}{4}$$

30) 0

31)  $-\sqrt{3}/3$

$$32) \frac{-6 + 4\sqrt{21}}{25}$$

$$33) \frac{627}{725}$$

34)  $-\frac{120}{169}$

35)  $-7/25$

$$36) \frac{\sqrt{10}+1}{-3} = \frac{\sqrt{11+2\sqrt{10}}}{3} \sim 1.38$$

$$37) \frac{\sqrt{8+2\sqrt{15}}}{4} = \frac{2(4+\sqrt{15})}{4}$$

$$38) \frac{\sqrt{2+\sqrt{2}}}{2}$$

39)  $-24/25$

40)  $\sqrt{\frac{x-7}{2}} \quad y \geq 0$

41) no, no