

Math 121 – Section 6.1 Solutions

35. $30^\circ = \frac{\pi}{6}$

37. $240^\circ = \frac{4\pi}{3}$

39. $-60^\circ = -\frac{\pi}{3}$

41. $180^\circ = \pi$

43. $-135^\circ = -\frac{3\pi}{4}$

45. $-90^\circ = -\frac{\pi}{2}$

47. $\frac{\pi}{3} = 60^\circ$

49. $-\frac{5\pi}{4} = -225^\circ$

51. $\frac{\pi}{2} = 90^\circ$

53. $\frac{\pi}{12} = 15^\circ$

55. $-\frac{\pi}{2} = -90^\circ$

57. $-\frac{\pi}{6} = -30^\circ$

71. If $r = 10$ meters and $\theta = \frac{1}{2}$ radians then:

$$s = r\theta = (10) \left(\frac{1}{2} \right) = 5 \text{ meters}$$

76. If $r = 6$ meters and $s = 8$ meters then:

$$\theta = \frac{s}{r} = \frac{8}{6} = \frac{4}{3} \text{ radians}$$

79. If $r = 10$ meters and $\theta = \frac{1}{2}$ radians then:

$$A = \frac{1}{2}r^2\theta = \frac{1}{2}(10)^2 \left(\frac{1}{2} \right) = 25 \text{ meters}^2$$

84. If $r = 6$ meters and $A = 8$ meters² then:

$$\theta = \frac{2A}{r^2} = \frac{2(8)}{6^2} = \frac{4}{9} \text{ radians}$$

87. If $r = 2$ feet and $\theta = \frac{\pi}{3}$ radians then:

$$s = r\theta = \frac{2\pi}{3} \text{ feet}$$

$$A = \frac{1}{2}r^2\theta = \frac{2\pi}{3} \text{ feet}^2$$

89. If $r = 12$ yards and $\theta = 70^\circ = \frac{7\pi}{18}$ radians then:

$$s = r\theta = \frac{14\pi}{3} \text{ yards}$$

$$A = \frac{1}{2}r^2\theta = 28\pi \text{ yards}^2$$