

## Answers to WIR 5 Review Problems

1.  $\frac{dr}{dt} = \frac{3}{20\pi}$  inches per minute
2.  $\frac{d\theta}{dt} = \frac{1500}{29}$  radians per hour
3.  $\frac{dV}{dt} = \frac{2\pi}{3}$  cubic inches per second
4. The area is increasing at a rate of 5 square feet per second
5.  $\frac{dy}{dt} = \frac{-\sqrt{160}}{3}$  feet per second
6.  $\frac{dy}{dt} = \frac{20}{\sqrt{2}}$  units per second
7. a.)  $\Delta y = -1.25$   
b.)  $dy = -1$
8. a.) 266.24  
b.)  $\frac{\sqrt{3}}{2} - \frac{\pi}{360}$
9.  $L(x) = -4x + 4$
10.  $L(x) = 1 + \frac{1}{2}x$ ;  
 $\sqrt{0.9} \approx L(-0.1) = .95$ ,  
 $\sqrt{1.2} \approx L(.2) = 1.1$
11.  $Q(x) = 1 - 1/2x^2$ ,  $\cos(0.1) \approx Q(0.1) = .995$
12.  $dA = 9.6\pi$
13.  $x_3 = -1.6987$
14. 1.584893
15. 1.435477