

Answers

Winter 2012 Math 125 Final Exam

1. (a)  $\sin^{-1}(x) + \sqrt{1-x^2} + C$   
(b)  $2 \ln|x| - \frac{1}{2} \ln(x^2 + 4) - \frac{1}{2} \tan^{-1}\left(\frac{x}{2}\right) + C$
2. (a)  $xe^x - e^x + \frac{1}{2}x^2 \ln(x) - \frac{1}{4}x^2 + C$   
(b)  $\ln(2 + \sqrt{3}) - \ln(\sqrt{3})$
3.  $\frac{8}{3}$
4.  $\frac{7}{12}$
5. (a) 26 miles  
(b) 14 miles  
(c) 40 minutes  
(d) 3 times  
(e) 140
6. (a)  $V = \int_2^4 2\pi(x+3)(t(x) - b(x)) dx$   
(b)  $V \approx 382.2$
7.  $\bar{x} = \frac{3}{8}, \quad \bar{y} = -\frac{19}{25}$
8. (a)  $A(t) = \int_0^{15-2t} \sqrt{10+x^{1/3}} dx$   
(b)  $-4\sqrt{3} \text{ m}^2/\text{sec}$
9.  $y = \tan\left(\frac{2\sqrt{5}}{3}t^{3/2} + \frac{\pi}{4}\right)$
10. 119.72 kg