

Answers

Winter 2013 Math 125 Final Exam

1. (a)  $-\frac{\sqrt{25-9x^2}}{25x} + C$   
(b)  $\frac{1}{5} \ln|x| - \frac{1}{10} \ln(x^2 + 4x + 5) + \frac{3}{5} \tan^{-1}(x + 2) + C$
2. (a)  $\frac{4}{9}$   
(b)  $\frac{16}{7} \ln 2 - \frac{15}{28}$
3.  $-2e^3$
4. (a) 45 miles  
(b) 11.25 gallons
5.  $6 \ln 2 + 3\sqrt{3} - \frac{2}{5}$
6. (a) 120,000 ft-lb  
(b)  $5\sqrt{2} \approx 7.071$  feet
7. (a)  $\int_{0.10}^{0.25} \sqrt{25 \sin^2 5t + 4 \cos^2 2t} dt$   
(b) 0.6289
8.  $\bar{y} = \frac{3\sqrt{3} - \pi}{4(\pi + 6\sqrt{3} - 12)}$
9.  $y = -\sqrt{2e^{2x-1}} - 1$
10. (a)  $\frac{dT}{dt} = k(T - 59)$   
(b)  $k = \frac{1}{2} \ln\left(\frac{5}{6}\right); \quad T = 59 + 108e^{kt} = 59 + 108\left(\frac{5}{6}\right)^{t/2}$   
(c) 134°F