

Answers

Autumn 2010 Math 125 Final Exam

1. (a) $\frac{3}{16}$
 (b) $12 + \frac{1}{3} \ln 7 + \frac{8}{3} \ln 2 - \frac{1}{3} \ln 5$
2. (a) $\frac{1}{2012}(7-x)^{2012} - \frac{7}{2011}(7-x)^{2011} + C$
 (b) $\frac{1}{2} \sin(x^2 + 1) - \frac{1}{2}x^2 \cos(x^2 + 1) + C$
3. (b) $\int_0^2 2\pi(3-x)x^4 dx = \frac{256\pi}{15}$
 (c) $\int_0^{16} \pi \left((3 - y^{1/4})^2 - (1)^2 \right) dy$
4. $\frac{128}{1125}$
5. (a) $20 - \frac{y}{5}$ kg
 (b) 7546 joules
6. (a) $\pi(4 - z_i^2) \Delta z$ ft³
 (b) $\frac{15\pi(4 - z_i^2)}{z_i^2 + 9} \Delta z$ lb
 (c) $\sum_{i=1}^n \frac{15\pi(4 - z_i^2)}{z_i^2 + 9} \Delta z$ lb
 (d) $\int_0^2 \frac{15\pi(4 - z^2)}{z^2 + 9} dz$ lb
7. $\frac{\ln 2}{24} + \frac{1}{72}$
8. $\frac{-2}{300 \sin^{-1}(t/10) + 3t\sqrt{100 - t^2} + 4}$
9. $50(1 - e^{-0.015t})$ kg
10. (a) Positive (b) Negative (c) Always true
 (d) Might be false (e) Might be false