

Answers

Spring 2008 Math 125 Final Exam

1. (a) $\frac{(x-1)^{2010}}{2010} + \frac{(x-1)^{2009}}{2009} + C$
(b) $\frac{t^9 \ln t}{3} - \frac{t^9}{27} + C$
2. (a) $2 \ln \sqrt{t} - 2 \ln(1 + \sqrt{t}) + C$
(b) $\frac{\pi}{2}$
3. $\frac{2\sqrt{6}}{25}$
4. $\frac{5}{3}$
5. 1
6. (a) $\int_1^t 2\pi(x-1)e^{x^3} dx$
(b) $2\pi e^8$
7. $36\pi - 3h^2\pi + \frac{h^3\pi}{3}$
8. (a) $k = \frac{9.8}{0.03} \approx 326.667$
(b) $0.0002k \approx 0.065333 \text{ J}$
9. $(\bar{x}, \bar{y}) = \left(\frac{\pi}{2}, \frac{5\pi}{8}\right)$
10. (a) $P(t) = 11,550,000e^{0.01t} + 450,000$ (where $t = 0$ in 1998)
(b) $11,550,000e^{0.1} + 450,000 \approx 13.2$ million