

Math 113 Practice Exam Answers

2001 Final Exam

- (a) $\frac{2x(3 + \ln x) - x}{(3 + \ln x)^2}$ (b) $\frac{5e^{\tan^{-1} 5x}}{1 + 25x^2}$ (c) $\frac{2xy - 1}{\cos y - x^2}$
- (a) $\frac{2}{(1 - 2x)^2}$ (b) $y = 2x - 3$
- 50 meters $\times \frac{100}{\pi}$ meters
5. $\frac{9}{4}$ ft/sec 6. $\frac{35}{3}$ 7. $\frac{3}{2} - \ln 2$
- (a) $2 \ln |\sec \sqrt{x} + \tan \sqrt{x}| + C$ (b) $\frac{1}{2}xe^{2x} - \frac{1}{4}e^{2x} + C$
- (c) $\frac{\pi}{20}$ (d) $8 \sin^{-1}\left(\frac{x}{4}\right) + \frac{x\sqrt{16 - x^2}}{2}$
- $\int_1^5 \pi \left((y - 1) - \left(\frac{y - 1}{2}\right)^2 \right) dy$ 10. $\int_0^{25} 2\pi x^2(25 - x) dx$

Winter 2004 Final Exam

- $f'(x) = -\frac{\cos \sqrt{x} \sin \sqrt{x}}{\sqrt{x}}$ 2. $\frac{dy}{dx} = \frac{2xy^3}{1 - 3x^2y^2 + \cos y}$
- $f'(x) = \frac{1}{2\sqrt{x-2}}$ 5. $\frac{250}{\sqrt{2}}$ MPH 6. $x = 3$
- $p_4(x) = 1 + 3x + \frac{9}{2}x^2 + \frac{27}{6}x^3 + \frac{81}{24}x^4$ 8. $-\frac{10}{3}$
- (a) $\frac{1}{20} \sec^5 4x - \frac{1}{12} \sec^3 4x + C$ (b) $\ln \left| \frac{\sqrt{4 + x^2}}{2} + \frac{x}{2} \right| - \frac{x}{\sqrt{4 + x^2}} + C$
- (c) $\frac{1}{2}x^2 \ln x + \frac{1}{4}x^2 + C$ (d) $3 \ln |x + 3| - \ln |x + 1| + C$
- (e) $\frac{1}{2}$ (f) diverges
- $\frac{2500}{8}$ ft-lbs 11. $\int_2^5 y - \frac{4}{y} dy$ 12. $\int_{-2}^1 \pi ((2 - x)^2 - (x^2)^2) dx$