

Math 125 F - Autumn 2006  
Mid-Term Exam Number Two  
November 16, 2006  
Answers

Version A

1. (a)  $\frac{1}{10} \sec^{10} x - \frac{1}{4} \sec^8 x + \frac{1}{6} \sec^6 x + C$

(b)  $-\frac{\sqrt{1+x^2}}{x} + C$

2. (a)  $-\frac{(\ln x)^2}{2x^2} - \frac{\ln x}{2x^2} - \frac{1}{4x^2} + C$

(b)  $\frac{1}{2} \ln|x| - \ln|x+1| + \frac{1}{2} \ln|x+2| + C$

3. (a)  $\frac{1}{5} (e^{2x} \sin x + 2e^{2x} \cos x) + C$

(b)  $\sqrt{x^2+1} - \sec^{-1}(x) + C$

4. (a)  $\frac{\pi}{\sqrt{7}}$

(b)  $\ln 3 - \ln 2$

5. 0.4958557

6. 5.5 cm

Version B

1. (a)  $-\frac{\sqrt{x^2+1}}{x} + C$

(b)  $\frac{1}{12} \sec^{12} x - \frac{1}{5} \sec^{10} x + \frac{1}{8} \sec^8 x + C$

2. (a)  $\frac{1}{2} \ln|x| - \ln|x+1| - \frac{1}{2} \ln|x+2| + C$

(b)  $-\frac{(\ln x)^2}{2x^2} - \frac{\ln x}{2x^2} - \frac{1}{4x^2} + C$

3. (a)  $\sqrt{x^2+1} - \sec^{-1}(x) + C$

(b)  $\frac{1}{5} (e^{2x} \sin x + 2e^{2x} \cos x) + C$

4. (a)  $\frac{\pi}{\sqrt{5}}$

(b)  $\ln 4 - \ln 3$

5. -1.41176009

6. 7.5 cm