

Math 126 C - Spring 2008  
Mid-Term Exam Number One  
April 24, 2008  
Answers

1. (a)  $T_2(x) = \frac{1}{3} + \frac{1}{36}x + \frac{1}{432}x^2$

(b)  $|f(x) - T_2(x)| \leq \frac{8}{279841} = 0.00002858766\dots$

2. (a)  $\frac{1}{2}x^2 - \frac{1}{16}x^8 - \frac{1}{336}x^{14} - \frac{1}{14400}x^{20}$

(b)  $h^{(20)}(0) = -\frac{19!}{6!}$

3.  $\frac{1}{2}x - \frac{1}{4}x^3 + \frac{1}{8}x^5 - \frac{1}{16}x^7$

4. (a) slope =  $\frac{48 - 4\pi}{\pi(\pi - 24)} = -0.540735\dots$

(b)  $\theta = 6 - \pi$

5. There are infinitely many solutions. One is  $\left\langle \frac{2}{\sqrt{13}}, \frac{3}{\sqrt{13}}, 0 \right\rangle$ .