Name: Solutions Section: 11 12 13

1. Find the Taylor polynomial of order 2 for $f(x) = \sqrt{x}$ centered at $a = 4$.

$f(x) = x^{1/2}$ $\quad f(4) = 4^{1/2} = 2$

$f'(x) = \frac{1}{2}x^{-1/2}$ $\quad f'(4) = \frac{1}{2} \cdot 4^{-1/2} = \frac{1}{4}$

$f''(x) = -\frac{1}{4}x^{-3/2}$ $\quad f''(4) = -\frac{1}{4} \cdot 4^{-3/2}$

$= -\frac{1}{4} \cdot \frac{1}{2^3} = -\frac{1}{32}$

$T_2(x) = f(4) + f'(4)(x-4) + f''(4)(x-4)^2$

$= 2 + \frac{1}{4}(x-4) + \frac{-1/32}{2!}(x-4)^2$