

7. Let $f(x) = x^3$

7a. $P(x) = 0^3 - 3(0)^2(x-0) + \frac{6(0)}{2!}(x-0)^2 = 0$
 $P_2(x) = 0$

7b. $P_2(0.5) = 0.125$; actual error ≈ 0.125

7c. $P_2(x) = 1 + 3(x-1) + 3(x-1)^2$

7d. $P_2(2.5) = -0.125$; actual error $= -0.125$

9. Find the second Taylor polynomial $P_2(x)$ for the function $f(x) = e^x \cos x$ about $x_0 = 0$

$f(x) = e^x \cos(x) + e^x \cos(x) - e^x \sin(x)(x-0)$

$P_2(x)$ $1 + 1(x-0)$

$(1 + x)$

9a. $P_2(\cos) = \frac{e(\sin(0.5) + \cos(0.5))}{24} = 0.1232$

Actual error 0.0731

9b. $P_2(x) = \frac{-2e^{\frac{x}{2}}(\sin(\frac{x}{2}) + \cos(\frac{x}{2}))x^3}{6}$

9c.

