

- 1a) Find the Taylor Polynomial of order 3 generated by  $f(x) = \cos x$  at  $x = \frac{\pi}{3}$ .
- b) Use the Remainder Estimation Theorem to determine  $|f(1.01) - P_3(1.01)| \leq R$  where  $R$  is the error bound
2. The polynomial  $1 + 7x + 21x^2$  is used to approximate  $f(x) = (1 + x)^5$  on the interval  $-0.1 \leq x \leq 0.1$
- a) Use the Lagrange Error Bound to find  $|f(x) - P_2(x)| \leq R$  where  $R$  is the error bound
3. a. Write the first 2 terms for  $f(x) = \sin(x^2)$  centered at  $x = 0$ .  
b. Then determine  $|f(.1) - P_6(.1)| \leq R$  where  $R$  is the error bound