

Ceng 375 - Quiz 4

For Thursday & Friday sections

1. Economize a Maclaurin series for e^{2x} by using Chebyshev polynomials with a precision of 0.08.

Hints:

- Taylor series expansion;

$$P_n(x) = f(a) + \frac{f'(a)}{1!}(x-a) + \frac{f''(a)}{2!}(x-a)^2 + \frac{f'''(a)}{3!}(x-a)^3 + \dots \\ + \frac{f^n(a)}{n!}(x-a)^n + \dots$$

- For $a = 0$, we have *Maclaurin series*.
- Chebyshev polynomials;

$$T_{n+1}(x) = 2xT_n(x) - T_{n-1}(x) \\ T_0(x) = 1 \quad \& \quad T_1(x) = x$$