Let  $f(x) = \cos(x)$  and let  $x_0 = \frac{\pi}{2}$ .

- 1. Find  $P_3(x)$
- 2. Verify your answer by graphing  $P_3(x)$  and f(x) on the same set of axes with  $-\pi \le x \le 2\pi$
- 3. Use  $P_3(2)$  to approximate cos(2)
- 4. How accurate is your answer?
- 5. Find a value of n so that  $P_n(2)$  approximates  $\cos(2)$  accurate within  $10^{-10}$ .

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