3b $T(h) - \int_0^{2\pi} e^{-x}\sin x\,dx = \frac{2\pi h^2}{12} f''(\xi) \leq 10^{-4}$

$\frac{2\pi h^2}{12} f''(\xi) = 10^{-4}$

$\frac{2\pi\left(\frac{2\pi}{n}\right)^2}{12} f''(\xi) = 10^{-4}$

$\frac{8\pi^2}{12n^2} f''(\xi) = 10^{-4}$

$n = \sqrt{\frac{8\pi^2}{12\cdot 10^{-4}} f''(\xi)}$

$n = \sqrt{-\frac{8\pi^2}{12\cdot 10^{-4}} 2e^{-\xi}\cos(\xi)}$

$\xi = 0$

$n \approx 362.76$

$\hat{n} = 363$

$f(x_0) \rightarrow f(x_n)$

$\hat{n} + 1 = 364$ FUNCTION EVALUATIONS