1. The Euler phi function $\phi\colon (-1,1) \to \mathbb{R}$ is defined by $\phi(x) = \prod\limits_{k=1}^{\infty} 1 - x^k$ (this is an "infinite product"). Estimate the value of the integral $\int_{-0.5}^{0.5} \phi(x)\,\mathrm{d}x$ using a Riemann sum with a partition pair P, T where P contains 5 total points (draw and label everything involved). A plot of the function is shown:
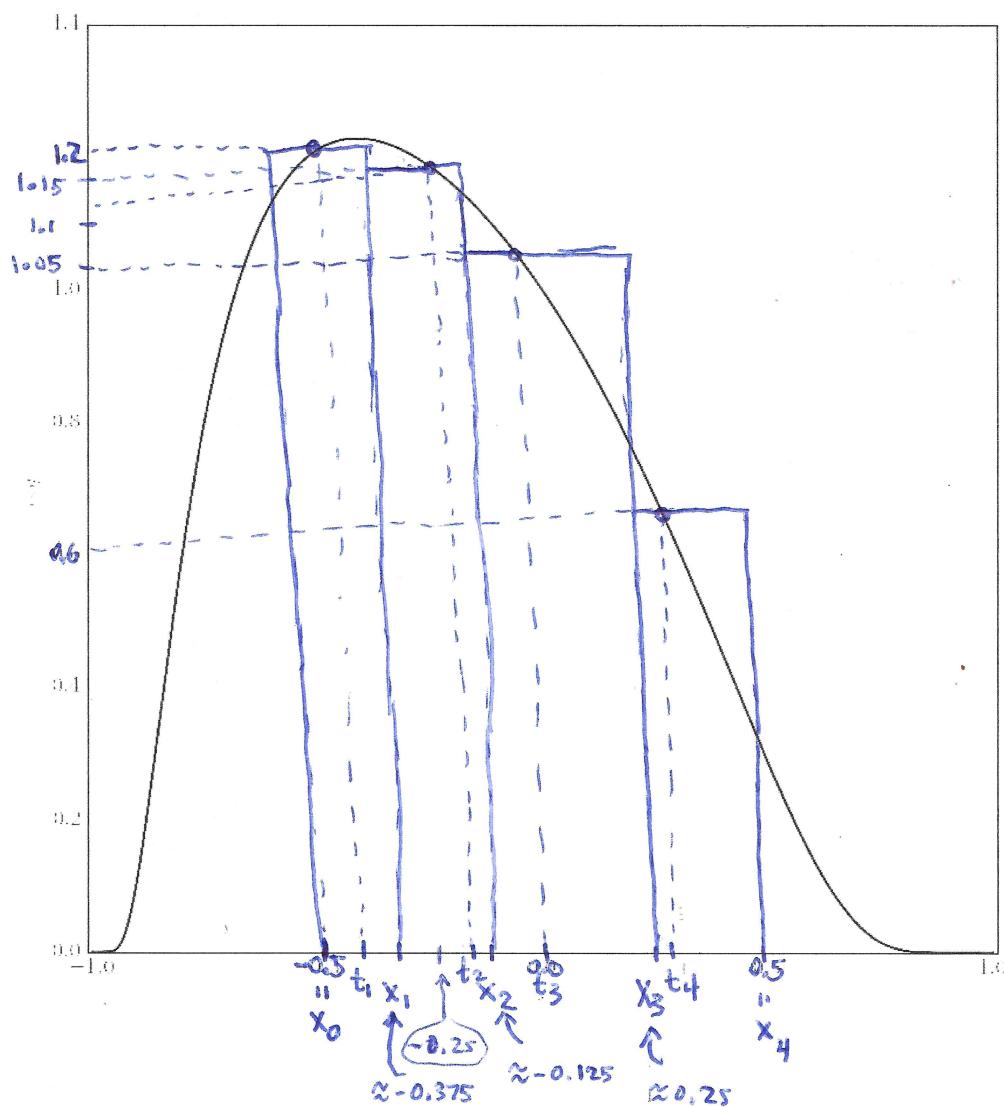
	Width	Height
Rect 1	0.125	1.2
2	0.25	1.15
3	0.375	1.05
4	0.25	0.6

$P = \{x_0, x_1, x_2, x_3, x_4\}, \quad T = \{t_1, t_2, t_3, t_4\}$

$$R(\phi, P, T) = (0.125)(1.2) + (0.25)(1.15)$$
$$+ (0.375)(1.05) + (0.25)(0.6)$$
$$= 0.98125$$