

1) Sketch the graph of $y = \frac{2 - \cos x}{2 \cos x - 1}$

2) Determine the graph of the parametric curve

$$x(t) = \frac{1}{t+1}$$

$$y(t) = \frac{t-1}{t(t+1)}$$

3) Prove the inequalities $\frac{1}{n} \sum_{k=1}^n \frac{n^2}{n^2 + k^2} \leq \frac{\pi}{4} \leq \frac{1}{n} \sum_{k=0}^{n-1} \frac{n^2}{n^2 + k^2}$

4) $\int \frac{8x-3}{\sqrt{1-2x-x^2}} dx$, $\int \frac{2x+3}{16+13x^2} dx$, $\int \frac{\sqrt{4x^2-9}}{x} dx$

5) Sketch the graph of $y = \text{Arctan} \frac{x}{1-x}$