

Practice Final II

1. If $f(x) = x^5 + x^3 + 4$, then $(-1, 2)$ is on the graph of $f(x)$. Determine the graph of the tangent line to the graph of $f^{-1}(x)$ at $x = 2$.
2. Calculate the area of the region enclosed by the polar graph of:

$$f(\theta) = 3 \sec(\theta), \text{ and the lines } \theta = \pi/4 \text{ and } \theta = \pi/3.$$

3. Determine the interval of convergence of the power series

$$\sum_{n=1}^{\infty} \frac{(-1)^n (2x^n)}{n}.$$

4. Apply an appropriate test to determine whether the following series is convergent or divergent:

$$\sum_{n=1}^{\infty} \frac{(-1)^n}{\sqrt{n}}.$$

You must state which test you are using and check all of the conditions required for it to apply.