Name: _____
Period: ____

AP Calculus BC

La Cañada High School
Mr. Szamosfalvi

HW #6.1

Determine the convergence of the following series (i) **intuitively** and then (i) **using one of the tests**.

1. $\sum_{n=1}^{\infty} \frac{5^n n!}{n^5 (n+2)!}$

2. $\sum_{k=1}^{\infty} \frac{k^k}{7^{2k}}$

3. $\sum_{n=0}^{\infty} \frac{ln(n+4)}{n+4}$

4. **Eliminate** the parameter and **sketch** the graph of the parametric curve. What is the **domain and range**?

$x = \sqrt{t}$

$y = t - 2$

5. **Eliminate** the parameter and **sketch** the graph of the parametric curve. What is the **domain and range**?

$x = \sin t$

$y = \cos 2t$

6. **Eliminate** the parameter and **sketch** the graph of the parametric curve. What is the **domain and range**?

$x = 2\sin t$

$y = \cos t$

$\pi \le t \le 2\pi$

7. **Challenge Problem**: Think about the methods we used in this class to approximate various things (area, slope of tangent line, y-coordinate) and design a conceptual method to estimate the length of a curve using calculus.