Critical Thinking Questions

Figure 1: t

his a mascoot of pokemon.

1. Let's examine the function $y = y = \dfrac{x}{3x^2 + x + 1}$

2. this is the symbol for all real numbers : $\mathbb{R}$.

3. this is the symbol for the set of rationals : $\mathbb{Z}$.

4. this is the symbol for thee set of rationals : $\mathbb{Q}$.

5. Is it possible for a sequence to converge to two different numbers ? If So , give an example. if not, explain why not.

6. Explain how to use partial sums to determine if a series converges or diverges . Give an examples.

7. Explain why $\int_1^\infty f(x)\,dx$ and $\sum_{n=1}^{\infty} a_n$ need not converge to the same value , even if they are both convergent.

8. In your own words ,explain the Alternating Series Remainder theoram . How is this theoram useful?

9. Explain the difference between absolute and conditional convergence . Give an Example of each .

10. The ratio Test is inconclusive if $\lim_{n\to\infty} \left|\frac{a_{n+1}}{a_n}\right| = 1$. Give an example of one convergent series and one divergent series for which $\lim_{n\to\infty} \left|\frac{a_n+1}{a_n}\right| = 1$ Explain how you determined your examples .