1. Show whether each of the following converges or diverges. You may use the fact that  \( \sum_{n=1}^{\infty} \frac{1}{n^p} \) converges for \( p>1 \).

   a) \[ \sum_{n=1}^{\infty} \frac{n^2 + n}{\sqrt{n^7 + 3n^5}} \]

   b) \[ \sum_{n=1}^{\infty} \frac{n^3}{6n^3 + 7n^2} \]

2. Find the interval of convergence of the power series \( \sum_{n=1}^{\infty} \frac{(x-5)^n}{3^n \sqrt{n}} \). Be sure to show your work when determining convergence at the endpoints.

3. You can afford monthly car payments of $300. At 9% interest compounded monthly and a series of 60 monthly payments starting one month from today, what (to the nearest penny) is the most you can borrow today? (In other words, find the PV of this series of payments.) Recall that \( PV = FV \left(1 + \frac{r}{n}\right)^{-nt} \).