1. Find the radius of convergence for each of the following power series and then find the interval of convergence and check each endpoint to conclude for exactly which $x$ values each power series is a well-define function.

a. 

$$P(x) = \sum_{n=1}^{\infty} \frac{nx^n}{n+2}$$

b. 

$$Q(x) = \sum_{n=1}^{\infty} \frac{(x-2)^n}{10^n}$$

c. 

$$R(x) = \sum_{n=1}^{\infty} \frac{3^n x^n}{n!}$$

d. 

$$S(x) = \sum_{n=1}^{\infty} n!(x+4)^n$$

2. Look up and State the Second Fundamental Theorem of Calculus (p. 279) and explain why it is significant in Calculus. You need to write a paragraph here. Think about the things we have discussed about ways to define functions. Think about proof of the first Fundamental Theorem of Calculus. Think about differential equations. I want clear easy to read sentences. Write it out and then copy it over.
3. A car is going 80 feet per second when the driver puts on the brakes, bringing the car to a stop in 5 seconds. Assume the deceleration is constant while the brakes are on.

a. What is the acceleration (really deceleration) of the car?

b. How far does the car travel from the time the brakes are applied until it stops?

c. Suppose the car is traveling twice as fast and the brakes are applied with the same force as before. How far does the car travel from the time the brakes are applied until it stops?

d. Suppose the brakes are twice as strong (can stop the car in half the time). How far will the car travel when its speed is 80 feet per second? How far if its speed is 160 feet per second?