1. More Taylor & Maclaurin stuff . . . .

(a) Find the interval of convergece for the power series below:

$$\alpha(x) = x^2 - \frac{1}{3!}x^5 + \frac{1}{6!}x^8 - \cdots = \sum_{n=0}^{+\infty} \frac{(-1)^n}{(3n)!}x^{3n+2}$$

(b) Find the limit:

$$\lim_{x \to 0} \frac{\alpha(x)}{5x^2}$$

(c) Use a fifth degree polynomial to estimate

$$\int_0^1 \alpha(x)\, dx$$

2. Find the interval of convergence for the power series below:

$$\beta(x) = 1 - \frac{1}{2}(x-5) + \frac{1}{2 \cdot 2^2}(x-5)^2 - \frac{1}{3 \cdot 2^3}(x-5)^3 + \cdots$$

$$= 1 + \sum_{n=1}^{+\infty} \frac{(-1)^n}{n2^n}(x-5)^n$$