Homework Problems for Chapter 11, Section 8

(1) Find the interval of convergence of $\sum_{n=3}^{\infty} \frac{(x+2)^n}{\sqrt{n}}$.

(2) Find the interval of convergence of $\sum_{n=2}^{\infty} \frac{2^n(x-3)^{2n}}{n^{3/2}}$.

(3) Find the interval of convergence of $\sum_{n=1}^{\infty} \frac{n^2(x+4)^n}{3^n}$.

(4) Find the interval of convergence of $\sum_{n=3}^{\infty} \frac{(-5)^n(x-1)^n}{n}$.

(5) Find the radius of convergence of $\sum_{n=5}^{\infty} \left[\left(1+\frac{1}{n}\right)^{n^2} x^n \right]$ using the Root Test.

(6) Assume that $\sum_{n=0}^{\infty} c_n(x-7)^n$ diverges when $x = 2$ and converges when $x = 3$. Does it converge or diverge when $x = 10$? Explain. Does it converge or diverge when $x = 15$? Explain.

(7) Is it possible to have a power series $\sum_{n=0}^{\infty} c_n(x-7)^n$ which converges when $x = 2$ and diverges when $x = 3$? Explain.