ANALIZA MATEMATYCZNA

LISTA ZADAŃ 6

13.11.17

(1) Znajdź promień zbieżności szeregów potęgowych:

(a)
$$\sum_{n=1}^{\infty} \frac{\binom{3n}{n} x^n}{n^2},$$

(b)
$$\sum_{n=1}^{\infty} \frac{2^{n+7}x^{6n}}{\sqrt{n}}$$
,

(c)
$$\sum_{n=1}^{\infty} \frac{(54n+1)^n x^{3n}}{(81n+2)^n},$$

(d)
$$\sum_{n=1}^{\infty} 10^{n^2} x^{n^3},$$
(f)
$$\sum_{n=1}^{\infty} \frac{10^n x^n}{n^{10}},$$

(e)
$$\sum_{n=1}^{\infty} n! \, x^{2^n}$$

(f)
$$\sum_{n=1}^{\infty} \frac{10^n x^n}{n^{10}}$$
,

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

(h)
$$\sum_{n=1}^{\infty} 50^n x^{2n+5}$$
,

(i)
$$\sum_{n=1}^{\infty} \frac{x^n}{n(n+1)}$$

(h)
$$\sum_{n=1}^{n=1} h$$
(j)
$$\sum_{n=1}^{\infty} 50^{n} x^{2n+5},$$
(l)
$$\sum_{n=1}^{\infty} \frac{x^{2n}}{\sqrt{n^{2}+n}-n},$$
(l)
$$\sum_{n=1}^{\infty} \frac{(2n)! x^{n}}{(n!)^{3}},$$

(e)
$$\sum_{n=1}^{\infty} n! \, x^{2^n},$$
(g)
$$\sum_{n=1}^{\infty} \frac{x^n}{n \, 10^{n-1}},$$
(i)
$$\sum_{n=1}^{\infty} \frac{x^n}{n(n+1)},$$
(k)
$$\sum_{n=1}^{\infty} \frac{4^{n+5} x^{3n+7}}{n \, 6^{2n}},$$

(1)
$$\sum_{n=1}^{\infty} \frac{(2n)!x^n}{(n!)^3}$$
,

(m)
$$\sum_{n=1}^{n-1} \frac{n!}{n^n} x^{n+7},$$

(o)
$$\sum_{n=1}^{n-1} {4n \choose n} x^n,$$

$$(p) \quad \sum_{n=1}^{\infty} n! \, x^{n^2},$$

(q)
$$\sum_{n=1}^{\infty} \binom{n+10}{n} x^n,$$

(r)
$$\sum_{n=1}^{\infty} \frac{n! (3n)!}{(2n)! (2n)!} x^n,$$

(2) Znajdź granice

Enalgz granice:
(a)
$$\lim_{x \to 7} \left(\frac{1}{x-7} - \frac{8}{x^2 - 6x - 7} \right)$$
,
(c) $\lim_{x \to 4} \frac{\sqrt{x} - 2}{x - 4}$,

(b)
$$\lim_{x \to 0} x \sin\left(\frac{1}{x}\right)$$
,

(c)
$$\lim_{x \to 4} \frac{\sqrt{x} - 2}{x - 4}$$
,

(d)
$$\lim_{x \to 3} \frac{x-3}{x+2},$$

(e)
$$\lim_{x \to 5} \frac{x^2 - 4}{x^2 - 6x + 5},$$
(g)
$$\lim_{x \to 1} \frac{x^{2007} - 1}{x^{10} - 1},$$

(f)
$$\lim_{x \to 1} \left(\frac{1}{1 - x} - \frac{3}{1 - x^3} \right)$$
,
(h) $\lim_{x \to 1/2} \frac{8x^3 - 1}{6x^2 - 5x + 1}$,

(g)
$$\lim_{x \to 0} \frac{x^{2007} - 1}{x^{10} - 1}$$

(h)
$$\lim_{x \to 1/2} \frac{8x^3 - 1}{6x^2 - 5x + 1},$$

(i)
$$\lim_{x \to -2} \frac{x^3 + 3x^2 + 2x}{x^2 - x - 6}$$

$$(j) \quad \lim_{x \to 0^+} \frac{x - \sqrt{x}}{\sqrt{x}},$$

(k)
$$\lim_{x \to 1} \frac{(x-1)\sqrt{2-x}}{x^2-1}$$
,