



OKAN ÜNİVERSİTESİ
MÜHENDİSLİK-MİMARLIK FAKÜLTESİ
MÜHENDİSLİK TEMEL BİLİMLERİ BÖLÜMÜ

2015–16

MAT234 Matematik IV – Ödev 7

N. Course

SON TESLİM TARİHİ: Salı 26 Nisan 2016 saat 16:00'e kadar.

Egzersiz 13 (Absolute and Conditional Convergence). [2 × 20p]

$$(a) \sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{\cosh n} \quad (b) \sum_{n=1}^{\infty} \frac{(-1)^n \log n}{n - \log n}.$$

For each series above, does the series converge absolutely, converge conditionally or diverge?

[HINT: If $f(x) = \frac{\log x}{x - \log x}$, calculate $f'(x)$. Is $f'(x) > 0$ or < 0 for large x ?]

Egzersiz 14 (Power Series). [3 × 20p] Find the radius of convergence R , and the open interval of convergence $(-R, R)$, of each of the following power series:

$$(a) \sum_{n=0}^{\infty} \frac{(2x)^n}{\sqrt{n^2 + 3}}, \quad (b) \sum_{n=0}^{\infty} \frac{(n)!x^n}{(2n)!}, \quad (c) \sum_{n=0}^{\infty} \frac{x^n}{\cosh(2n)}.$$

[HINT: $\cosh z = \frac{1}{2}(e^z + e^{-z})$.]

Ödev 6'nın çözümleri

12. (a) Diverges by the Ratio Test. A proof is left for you to do.
(b) Diverges by the Comparison Test with $\sum \frac{1}{\sqrt{n}}$.
(c) Diverges by the Divergence Test.
(d) Converges by the Integral Test.
(e) Converges by the Ratio Test.