HW #15 from 11.3

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1:23 PM

11.3

(15) $\sum_{n=1}^{\infty} \frac{\sqrt{n}+4}{n^2}$

$= \sum_{n=1}^{\infty} \left(\frac{\sqrt{n}}{n^2} + \frac{4}{n^2} \right)$

$a_n = \frac{n^{\frac{1}{2}}}{n^2} = \frac{1}{n^{\frac{3}{2}}}$

$= \sum_{n=1}^{\infty} \frac{\sqrt{n}}{n^2} + \sum_{n=1}^{\infty} \frac{4}{n^2}$

$= \sum_{n=1}^{\infty} \frac{1}{n^{3/2}} + 4 \sum_{n=1}^{\infty} \frac{1}{n^2}$

These are both convergent p-series ($p_1 = \frac{3}{2} > 1$ and $p_2 = 2 > 1$).

So, the original series converges.