

Quiz Seven

Tarn Adams, Math 152 Spring 2007

Write all answers on your ScanTron form. The short answer question can be written on the back of the ScanTron. There are a total of 15 points.

A. (1 point each) $a_n = \frac{2n^2 + \frac{3}{n^2}}{3n^2 - \frac{5}{n^2}}$ for $n \geq 2$. Find the limit and other information.

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|---------------------|--------------------------|----------------------|
| 1a. 0 | 2a. increasing | 3a. bounded |
| 1b. $2/3$ | 2b. decreasing | 3b. unbounded |
| 1c. $3/5$ | 2c. non-monotonic | |
| 1d. $-3/5$ | | |
| 1e. ∞ | | |

B. (1 point each) $a_n = (-1)^n \left(\frac{n}{n-1}\right)$ for $n \geq 2$. Find the limit and other information.

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|--|--------------------------|----------------------|
| 4a. 0 | 5a. increasing | 6a. bounded |
| 4b. 1 | 5b. decreasing | 6b. unbounded |
| 4c. $-\infty$ | 5c. non-monotonic | |
| 4d. ∞ | | |
| 4e. divergent but not $\pm\infty$ | | |

7. (3 points) Compute $\sum_{n=1}^{\infty} \frac{5(2)^{2n}}{3^n}$.

- a.** $\frac{20}{3}$
- b.** -20
- c.** 20
- d.** 10
- e.** divergent

8. (3 points) Compute $\sum_{n=2}^{\infty} \frac{n}{n+1}$.

a. $-\infty$

b. $\ln 2$

c. $\ln \frac{2}{3}$

d. ∞

e. divergent but not $\pm\infty$

9. (3 points) Is $\sum_{n=1}^{\infty} \frac{2+\cos n}{n^{1/2}}$ convergent? Justify your answer.