

Problem Set 5 Real Analysis 1 Due 9/27/2004

Each problem is worth 5 points. Clear and complete justification is required for full credit. You are welcome to discuss these problems with anyone and everyone, but must write up your own final submission without reference to any sources other than the textbook and instructor.

1. Prove that $\left\{ \frac{3}{\sqrt{n} + 2} \right\}$ converges.

2. Prove that if $\{a_n\}$ diverges to $+\infty$ and K is any real number then $\{a_n - K\}$ diverges to $+\infty$.

3. Prove that if $\{a_n\}$ is increasing and K is any real number then $\{K \cdot a_n\}$ is monotone.

4. Show that the sequence $\left\{ \frac{n}{n+1} \right\}$ is increasing.