

Each problem is worth 5 points. For full credit provide proper justification for your answer.

1. Find the sum of the series  $1 - \frac{1}{2} + \frac{1}{4} - \frac{1}{8} + \frac{1}{16} - \dots$ .

2. Express the sum  $5 + 10 + 20 + 40 + \dots + 5 \cdot 2^n$  in terms of  $n$ .