

Each question is worth 5 points. Show good justification for full credit. Don't panic.

1. Find, correct to at least 4 decimal places, the first three partial sums of the series

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

$$S_1 = \frac{1}{3+1} = \frac{1}{4} = \underline{0.2500}$$

$$S_2 = \cancel{\frac{1}{3+1}} \Rightarrow \frac{1}{4} + \frac{1}{3 \times 2 + 1} = \frac{1}{4} + \frac{1}{7} = 0.25 + 0.1429 = \underline{0.3929}$$

$$S_3 = \frac{1}{4} + \frac{1}{7} + \frac{1}{9+1} = \frac{1}{4} + \frac{1}{7} + \frac{1}{10} = 0.3929 + 0.1 = \underline{0.4929}$$

Great

2. Determine the exact sum of the geometric series

$$2 - 1 + \frac{1}{2} - \frac{1}{4} + \frac{1}{8} + \dots$$

$$a \cdot r^0 = 2$$

$$a = 2$$

$$2 \cdot r^1 = -1$$

$$r = \frac{-1}{2} = -\frac{1}{2}$$

$$\frac{2}{1 - (-\frac{1}{2})} = \underline{\underline{\frac{4}{3}}}$$

Good!