Each problem is worth 5 points. Provide good justification of your answers for full credit.

1. Find the first 3 partial sums of the series

$$\sum_{n=1}^{\infty} \frac{1}{2^n - 1}$$

① $\frac{1}{2-1} = \boxed{1}$

② $\frac{1}{4-1} = \frac{1}{3} + 1 = \boxed{\frac{4}{3}}$ *Excellent!*

③ $\frac{1}{8-1} = \frac{1}{7} + \frac{1}{3} + 1 = \boxed{\frac{31}{21}}$

2. Find the sum of the series

$$\sum_{n=0}^{\infty} \frac{1}{3^n}$$

$\frac{a}{1-r}$ $a = 1$ $r < |1| \therefore$ converges

$r = \frac{1}{3}$

$\frac{1}{1-\left(\frac{1}{3}\right)} = \boxed{\frac{3}{2}}$ *Nice!*