PRINT Your Name:_____

Quiz 22 — November 3, 2015

Consider the geometric series

$$3 + 2 + \tfrac{4}{3} + \tfrac{8}{9} + \dots \ .$$

Does the series converge? Find the sum, if possible. Explain.

Answer: We are considering the geometric series with initial term $a = 3$ and ratio $r = \frac{2}{3}$. (Notice that $3 \times \frac{2}{3} = 2$; $2 \times \frac{2}{3} = \frac{4}{3}$; and $\frac{4}{3} \times \frac{2}{3} = \frac{8}{3}$.) The ratio is between -1 and 1; thus the geometric series conveges. The sum of the series is

$$\tfrac{a}{1-r} = \boxed{\tfrac{3}{1-\frac{2}{3}}} = 9.$$