

CR MAY 2016



A geometric progression has common ratio $\frac{3}{4}$

Given that the sum of the first 4 terms is 175,

a) find the first term (show that $a = 64$)

b) hence, find the sum to infinity

c) find the difference between the ninth and
~~the~~ tenth terms.

$$a) S_4 = 175 = \frac{a(1 - (\frac{3}{4})^4)}{1 - \frac{3}{4}}$$

$$175 = 4a(1 - (\frac{3}{4})^4)$$

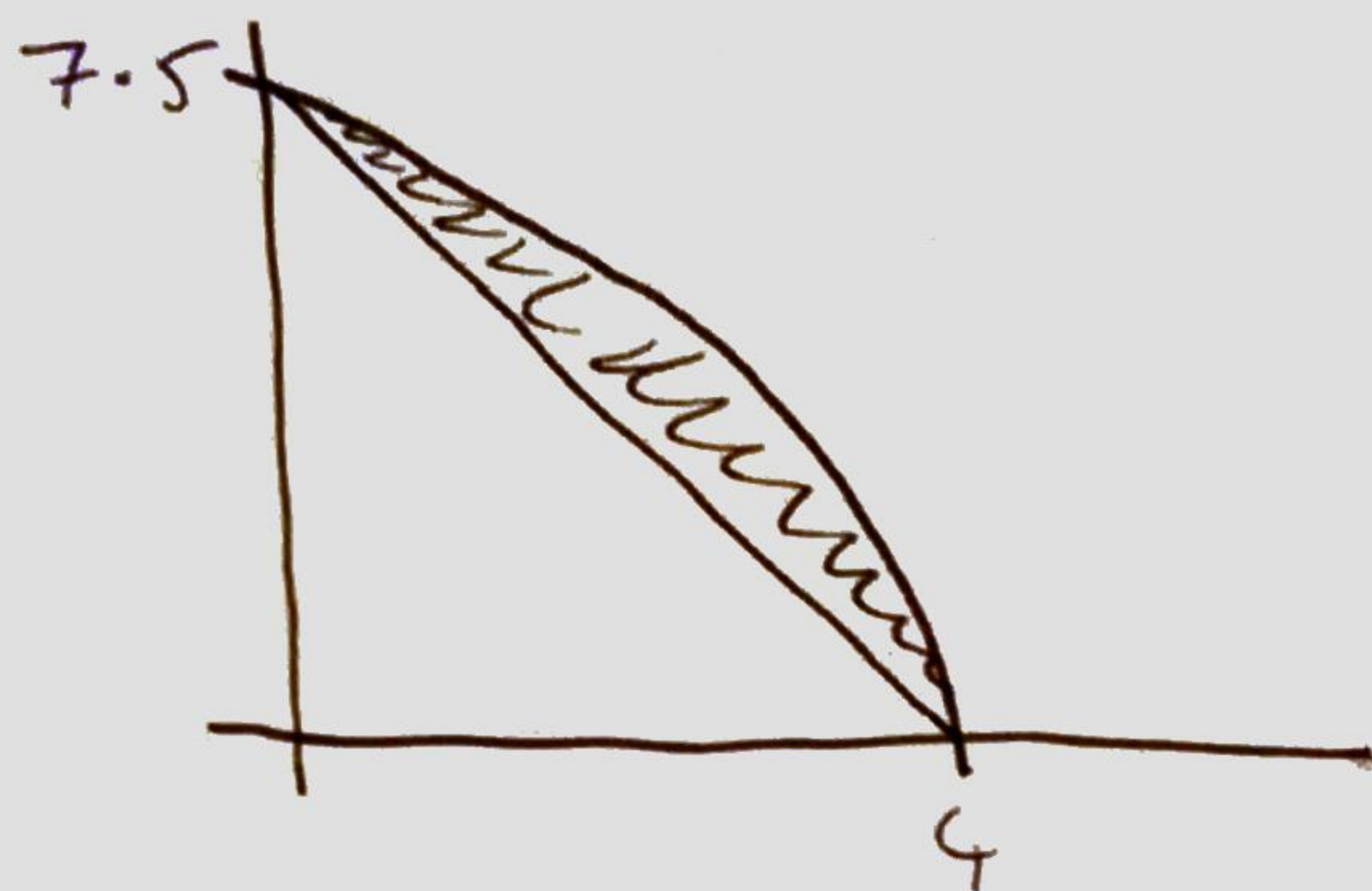
$$a = \frac{175}{4(1 - (\frac{3}{4})^4)} = \underline{64} \neq$$

$$b) S_{\infty} = \frac{a}{1-r} = \frac{64}{1 - \frac{3}{4}} = 4 \times 64 = \underline{256}$$

$$c) ~~846.4072~~
 $U_n = ar^{(n-1)}$$$

$$U_9 = 6.4072 \quad \therefore \text{diff} = \underline{1.602}$$

$$U_{10} = 4.8054$$



$$y = 8 - 2^{(x-1)}$$

x	0	1	2	3	4
y	7.5	7	6	4	0

a) Fill in the missing column for $x=1$

b) Find ^{an estimate for} the area bounded by the curve and x & y axes, using the trapezium rule with 4 strips

c) Hence, find ^{an estimate for} the area of the shaded region

$$b) \quad h=1 \Rightarrow A = \frac{1}{2} [7.5 + 0 + 2(7 + 6 + 4)]$$

$$= \underline{20.75}$$

$$c) \quad \text{Area of triangle} = \frac{1}{2} \times b \times h = \frac{1}{2} \times 4 \times 7.5 = 15.$$

$$\therefore \text{Area Shaded} = 20.75 - 15 = \underline{5.75}$$