# 1.3 Geometric Sequences

1, 2, 4, 8, 16...  $100, 50, 25, 12.5, ...

are examples of geometric sequences.

Geometric sequences have a common ratio between successive terms.

$$r = \frac{t_2}{t_1} = \frac{t_3}{t_2} = \frac{t_4}{t_3} = \frac{t_{n+1}}{t_n}$$

$t_1, t_1 \times r, t_1 \times r \times r, t_1 \times r \times r \times r, ...$

$t_1, t_1 \times r, t_1 \times r^2, t_1 \times r^3, ... t_n = t_1 \times r^{n-1}$

ex) $t_5 = t_1 \times r^{5-1}$ or $t_1 \times r^4$

ex) Find $t_8$ of the two sequences above.

① $t_8 = (1)(2)^{8-1}$
$= 128$

② $t_8 = 100\left(\frac{1}{2}\right)^{8-1}$
$= 100\left(\frac{1}{128}\right)$
$= \frac{100}{128} = \frac{25}{32}$

ex) $t_4 = 300$ and $t_6 = 75$. Find $r$ & $t_1$.

2400, 1200, 600, 300, 150, 75

$\times r$, $\times r$

$t_1$

$\frac{300}{300} \times r^2 = \frac{75}{300}$

$r^2 = \frac{1}{4}$

$r = \frac{1}{2}$ ← $\sqrt[2]{1/4}$

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

Disregard for PreCalll.

pg. 38 Your Turn

pg. 39-45 #1-6 (one of each)
#7-14, 16, 19

Extend #22-24

Connect #25-27