

Lesson 4 Geometric Sequences...again

Examples

1. Insert two geometric means between -2 and 128.

terms between given terms in a sequence

$$\begin{array}{ccccccc}
 & & (x^{t-1}) & & (x^{t-1}) & & \\
 & & 8 & & -32 & & 128 \\
 & & \downarrow & & \downarrow & & \downarrow \\
 -2 & , & & , & & , & \\
 t_1 & & & & & & t_4
 \end{array}$$

$$\begin{aligned}
 t_4 &= t_1 r^{4-1} \\
 128 &= -2 r^3 \\
 -64 &= r^3 \\
 -4 &= r
 \end{aligned}$$

2. In a geometric sequence the third term is 54 and the sixth term is -1458.
Determine the values of t_1 and r .

$$\begin{array}{ccccccc}
 & \div(-3) & & \div(-3) & & \times r & \times r & \times r \\
 6 & , & -18 & , & 54 & , & - & , & - & , & -1458 \\
 t_1 & & & & t_3 & & & & & & t_6
 \end{array}$$

$$\begin{aligned}
 t_6 &= t_3 r^3 \\
 -1458 &= 54 r^3 \\
 -27 &= r^3 \\
 -3 &= r
 \end{aligned}$$

work backwards

$$\therefore t_1 = 6$$

Exercise 4 Geometric Sequences...again

- 1.) Insert two geometric means between 4 and -13.5. (follow example 1) $4, -6, 9, -13.5$
- 2.) Insert two geometric means between -160 and 1280. $-160, 320, -640, 1280$
- 3.) In a geometric sequence the fourth term is 162 and the eighth term is 13 122.
Determine the values of t_1 and r . (follow example 2)
- 4.) In a geometric sequence the second term is 7 and the fifth term is $-\frac{7}{8}$. Determine the values of t_1 and r . $^{-14} \quad ^{-\frac{1}{2}}$
- 5.) Two terms in an arithmetic sequence are $t_{11} = 37$, and $t_{26} = 32$. Determine t_1 . $\frac{121}{3}$
(follow L1 ex 3)
- 6.) ~~If an arithmetic series has $t_1 = 10$ and $d = 3$, determine S_{62} .~~ (follow L2 ex 2) 6293
- 7.) Factor: $2x^2 + 7x - 4$. (follow QE L1 ex 4) $(2x-1)(x+4)$ $S_{21} = -315$
- 8.) Solve: $12x^2 - 5x - 2 = 0$. (follow QE L3 ex 1) $x = \frac{1}{4}$ $x = \frac{2}{3}$
- 9.) Solve: $3x^2 + 2x - 4 = 0$. (follow QE L5 ex 1)
 $x = \frac{-1 \pm \sqrt{13}}{3}$

Extra practice: Pg. 40 #9-15
