Lesson 9.2 Warm Up (Clickers)

1. What is the difference between a recursive and explicit formula for a sequence?

2. Solve for x: $9e^{3x-2} + 8 = 26$

3. Write a rational equation with a vertical asymptote at x = –2 and a horizontal asymptote at y = 3.

Lesson 9.2 Arithmetic Sequences

Essential Understanding: In an arithmetic sequence, the difference between any tow consecutive terms is always the same number. You can build an arithmetic sequence by adding the same number to each term.

An arithmetic sequence is a sequence where the difference between consecutive terms is constant. This difference is the common difference.

Arithmetic Sequence Formulas:

A recursive definition for this sequence has two parts:

$a_1 = a$ initial condition

$a_n = a_{n-1} + d$, for $n > 1$ recursive formula

An explicit definition for this sequence is a single formula:

$a_n = a + (n-1)d$, for $n \geq 1$

Ex. Is the sequence an arithmetic sequence?

3, 6, 9, 12, ...

Ex. Is the sequence an arithmetic sequence?

1, 4, 9, 16, 25, ...

1 Is the sequence an arithmetic sequence?

2,4,8,16,...

Yes

No

Ex. What is the 100th term of the arithmetic sequence that begins 6, 11, 16, ...?

2 What is the 110th term of the sequence that begins 5, 9, ...?

Ex. What is the 46th term of the arithmetic sequence that begins 3, 5, 7, ...?

Ex. What are the second and third terms of this arithmetic sequence?

80, _____, _____, 125

3 What are the 2nd and 3rd terms of this arithmetic sequence?

100, _____, _____, 82, ...

The <u>arithmetic mean</u>, or average, of two numbers x and y is (x + y)/2. In an arithmetic sequence, the middle term of any three consecutive terms is the arithmetic mean of the other two terms.

Ex. What is the missing term of the arithmetic sequence ..., 15, _____, 59, ...?

4 Th 9th and 11th terms of an arithmetic sequence are 132 and 98. What it is the 10th term?

Sports Arena The numbers of seats in the first 13 rows in a section of an arena form an arithmetic sequence. Rows 1 and 2 are shown in the diagram below. How many seats are in Row 13?

Row 2: 16 seats

Row 1: 14 seats