BE-1B TUESDAY 4-15-08

① Solve $7x^2 + 22x + 3 = 0$ by factoring.

② Solve $2x^2 - 5x - 12 = 0$ by factoring.

 USE THE "MAGIC NUMBER" METHOD, including FBG.

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* Homework ⇒ "Improvement Plan" or "Reason"

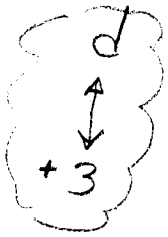
RECALL: Ch 4-7 Arithmetic Sequences

"A pattern of numbers that is found by adding or subtracting a constant value to each term to get the next term."

The constant value is called the common difference, d.

Ex) $6, 9, 12, 15, \ldots N$

$a_1 \quad a_2 \quad a_3 \quad a_4 \quad \quad a_N$



$\ldots$ is an ellipsis, it means the pattern continues

$$a_N = a_1 + (N-1)d$$

Find 15^{th} term $\Rightarrow N = 15$

$$a_{15} = a_1 + (15-1)d$$

$$a_{15} = 6 + (14)3$$

$$a_{15} = 6 + 42$$

$$a_{15} = 48$$

CK 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ✓

Ch. 10-7 Geometric Sequences

"A pattern of numbers that is found by multiplying a constant value to each term to get the next term."

The constant value is called the common ratio r

Ex) $1, 3, 9, 27, \ldots N$

$a_1, a_2, a_3, a_4, \quad a_N$

$r = 3$

$$a_N = a_1 r^{N-1}$$

Ex) Find the 8^{th} term $\Rightarrow N = 8$

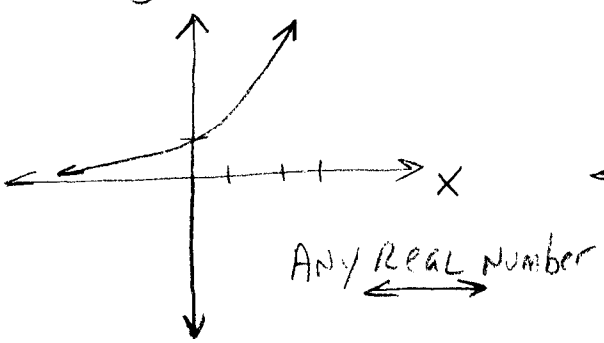
$$a_8 = a_1 r^{8-1}$$

$$a_8 = 1(3)^7 = 1 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3$$

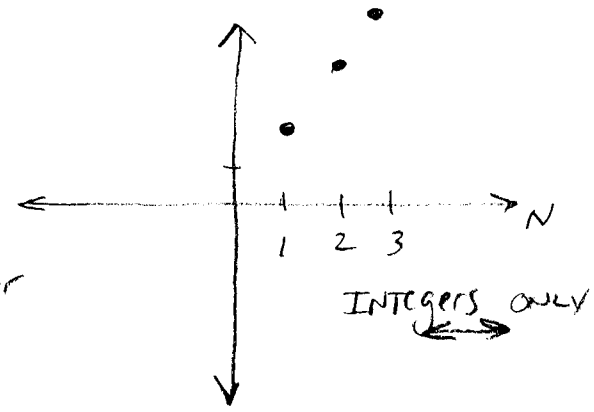
$$a_8 = 2187$$

When $r > 0$, a geometric sequence will be just like an exponential function <u>but</u> will only be "dots" on the graph, not a smooth line.

Ex) $y = 3^x$



Ex) 1, 3, 9, 27, ...



Plus, in a geometric sequence the common ratio can be negative.

Ex 1 Pg 567 Which sequence is geometric?

(A) 0, 5, 10, 15, ...

(b) 1, 5, 25, 125, ...

Ex 2 Pg 568 Find the next 3 terms in each geometric sequence.

(A) 4, -8, 16, ...

Make a common ratio $\frac{-8}{4} = -2 = r$

(b) 60, 72, 86.4, ...

$\frac{72}{60} = \frac{12}{10} = \frac{6}{5} = r$

Ex 4 Pg 569 Find the 6th term of a geometric sequence if $a_1 = 3$ $r = -5$

$a_N = a_1 r^{N-1}$

$a_6 = 3(-5)^{6-1}$

$= 3(-5)^5$

$= 3(-3125)$

$\boxed{a_6 = -9375}$

Homework
- Read Ch 10-7
- Pg 570 # 5 to 11