

THUR 3-13-08

DERIVE A FORMULA FOR THE  $n^{\text{th}}$  TERM  
OF AN A.P.

RECALL:

$$x_1 = a$$

$$x_n = x_{n-1} + d; n \geq 2$$

$$A_n = a + (n-1)d$$

$$\begin{array}{ccccccc} x_1 & x_2 & x_3 & x_4 & \dots & & A_n \\ a & a+d & a+2d & a+3d & & & a+(n-1)d \end{array}$$

Ex. 1) Find the 50<sup>th</sup> term of 7, 15, 23, 31, ...

1<sup>st</sup> IS AN A.P. B/c  $d=8$

$$A_n = a + (n-1) \cdot d$$

$$A_n = A_{50} = ?$$

$$a = 7$$

$$n = 50$$

$$d = 8$$

$$A_{50} = 7 + (50-1) \cdot 8$$

$$A_{50} = 7 + 49 \cdot 8$$

$$\underline{\underline{A_{50} = 399}}$$

$$\begin{array}{r} 49 \\ \times 8 \\ \hline 392 \end{array}$$

Ex 2) INSERT 4 ARITHMETIC MEANS BETWEEN

-4 AND 34.

$-4, \frac{18}{5}, \frac{56}{5}, \frac{94}{5}, \frac{132}{5}, 34$  IS AN A.P.  
 $\frac{170}{5}$  (with an arrow pointing to 34)

$$A_n = a + (n-1) \cdot d \rightarrow 34 = -4 + (6-1) \cdot d$$

$$A_n: \cancel{34}$$

$$a: -4$$

$$n: \cancel{6}$$

$$d: \dots$$

$$34 = -4 + 5d$$

$$38 = 5d$$

$$\frac{38}{5} = d$$

2<sup>nd</sup> Formula: THE SUM OF n TERMS OF AN A.P.:

$$S_n = \frac{n}{2} [2a + (n-1)d]$$

Ex. 3) FIND THE SUM OF THE 1<sup>st</sup> 40 TERMS  
OF  $2+5+8+\dots$

1<sup>st</sup> A.P.  $b/c d=3$ .

$$S_n = \frac{n}{2} [2a + (n-1)d]$$

$$S_n = ? \quad S_{40} = ?$$

$$a = 2$$

$$n = 40$$

$$d = 3$$

$$\begin{array}{r} 121 \\ 20 \\ \hline 2420 \end{array}$$

$$S_{40} = \frac{40}{2} [2(2) + (40-1)3]$$

$$S_{40} = 20 [4 + (39)(3)]$$

$$S_{40} = 20 [4 + 117]$$

$$S_{40} = 20 [121]$$

$$S_{40} = 2420$$

O.T.L.

FOR MON: P.48 1-6, 8, 10-13, 15-17

TEST FRI: B-G-R

COLLECT B-G-R

C.T.S.

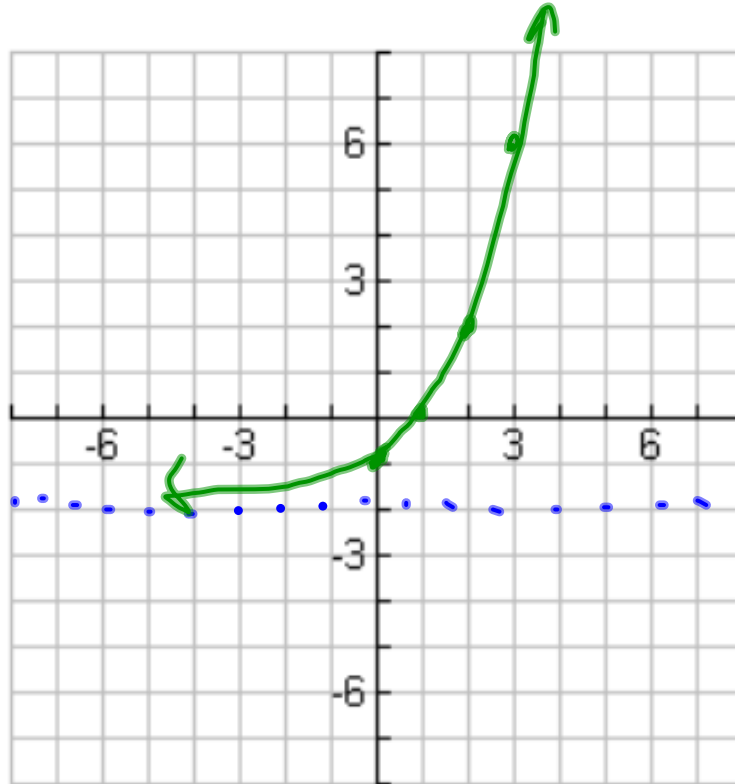
26 or 27 POINTS

3 POINTS

71

$$y = 2^x - 2$$

A blue arrow points to the base '2' of the exponential term  $2^x$ .



74

COS

MAX  
(-10, 80)      MAX  
(30, 80)

MIN  
 $y = -160$

$$\text{Period} = 40 = \frac{2\pi}{B}$$

$$40B = 2\pi$$

$$C = +10$$
$$-30$$

$$B = \frac{2\pi}{40} = \frac{\pi}{20}$$

$$A = \frac{80 - 160}{2}$$

$$D = \frac{80 + 160}{2}$$