PRECALC – BE! WEDNESDAY 1-6-10

① EVALUATE $256^{\frac{3}{4}}$ (NO CALCULATORS)

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① $256^{\frac{3}{4}} = \left(\sqrt[4]{256}\right)^3$ or $\sqrt[4]{256^3}$

256
16 16
4 4 4 4 ⇒ Perfect 4th root

$\Rightarrow (4)^3 = \boxed{64}$

Homework Review - Pg 763 #6-16

⑥ 21, 26, 31, 36 ⑦ 9, 17, 25, 33

⑧ $a+6, a+10, a+14, a+18$

⑨ Find a_{17} if $a_1 = 10$ $d = -3$

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

$$a_{17} = 10 + (17-1)(-3)$$

$$= 10 + (16)(-3)$$

$$= -38$$

⑩ Find N for $a_N = 37$ $a_1 = -13$ $d = 5$

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

$$37 = -13 + (N-1)5$$

$$37 = -13 + 5N - 5$$

$$37 = -18 + 5N$$

$$55 = 5N$$

$$11 = N$$

(11) Find a_1 if $d = -2$, $a_7 = 3$

$$\boxed{a_N = a_1 + (N-1)d}$$

$$3 = a_1 + (7-1)(-2)$$

$$3 = a_1 - 12 \quad \therefore \boxed{a_1 = 15}$$

(12) Find d if $a_1 = 100$ $a_{12} = 34$

$$\boxed{a_N = a_1 + (N-1)d}$$

$$34 = 100 + (12-1)d$$

$$34 = 100 + 11d$$

$$-66 = 11d \quad \therefore \boxed{d = -6}$$

(13) Write sequence with 2 arithmetic means between 9, 24 $\Rightarrow$

$$9, \_\_, \_\_, 24$$
$$a_1 \qquad\qquad a_4$$

$$24 = 9 + (4-1)d$$

$$15 = 3d \quad \therefore d = 5 \quad \therefore \boxed{14, 19}$$

$$\Rightarrow \boxed{9, 14, 19, 24}$$

(14) Find sum of 1st 35 terms of $7+9+11+\ldots$

$$\boxed{S_N = \frac{N}{2}(a_1 + a_N)}$$

First, find a_{35} $\Rightarrow$ $\boxed{a_N = a_1 + (N-1)d}$

$$a_{35} = 7 + 34(2) = 75$$

$$S_N = \frac{35}{2}(7+75) = \frac{35}{2}(82) = 35(41)$$

$$\boxed{S_N = 1435}$$

(For another way to do this see top of pg 762)

(15) Find N if $a_1 = 30$, $d = -4$, $S_N = -210$

$$\boxed{S_N = \frac{N}{2}(a_1 + a_N)}$$

$-210 = \frac{N}{2}(30 + a_N)$ $\Rightarrow$ 2 unknowns

use $S_N = \frac{N}{2}[2a_1 + (N-1)d]$

$$-210 = \frac{N}{2}[2(30) + (N-1)(-4)]$$

$$-210 = \frac{N}{2}[60 - 4N + 4] = \frac{N}{2}[64 - 4N]$$

$$-210 = 32N - 2N^2 \quad \therefore 2(N^2 - 16N - 105) = 0$$

$N = -5, +21$ $\Rightarrow$ $\boxed{N = 21}$

S -16
P -105
$5 \quad -21$

(16) | | | | +1 seat per row = d | 27 seats = a_{19}

N = 1 2 3 4, ... N = 19 rows

First, find a_1: $\boxed{a_N = a_1 + (N-1)d}$

$27 = a_1 + (19-1)1$

$9 = a_1$

$\therefore S_N = \frac{N}{2}(a_1 + a_N)$

$S_N = \frac{19}{2}(9+27) = \frac{19}{2}(36) = 19(18)$

$\boxed{S_N = 342 \text{ seats}}$

$$\begin{array}{r} 19 \\ \times 18 \\ \hline 152 \\ 19 \\ \hline 342 \end{array}$$

Homework: Pg 764 # 38, 40, 45, 46,
Pg 765 # 66