Arithmetic $4, 7, 10 \quad d=3$

common difference

Sequence Explicit $a_n = a_1 + d(n-1)$ $\quad a_n = 4+3(n-1)$

recursive $a_n = a_{n-1} + d, a_1 = \#$ $\quad a_n = 4+3n-3$

arithmetic mean $\quad a_n = 3n+1$

$$\left(\frac{a_1+a_3}{2}\right) = a_2 \qquad \underline{99}, \underset{82.5}{\frac{99+66}{2}}, \underline{66}$$

Geometric Sequences : ratio $= \frac{a_2}{a_1}$ or $\frac{a_3}{a_2}$

Explicit $a_n = a_1(r)^{n-1}$ $\quad \pm\sqrt{3 \cdot .75}$

Recursive $a_n = a_{n-1} \cdot r, a_1 = \#$

Geometric Mean $= \pm\sqrt{a \cdot b}$ $\quad \underline{3}, \boxed{1.5}, \underline{.75}$

Arithmetic Finite Series (sum)

$$S = \frac{n}{2}(a_1 + a_n)$$

ex $\sum_{n=1}^{10} (5n-2)$ ← linear

$a_1 = 5 \cdot 1 - 2 = 3$

$a_{10} = 5 \cdot 10 - 2 = 48$ $\quad S = \frac{10}{2}(3+48) = 255$

Shortcuts:

① $\sum_{i=1}^{n} 1 = n$

② $\sum_{i=1}^{n} i = \frac{1}{2}n(n+1)$

③ $\sum_{i=1}^{n} i^2 = \frac{1}{6}(n)(n+1)(2n+1)$

Geometric Series

Finite: $S = \frac{a_1(1-r^n)}{1-r}$

Area Rectangles 2nd trace #7

Infinite

If $|r| < 1$, $S = \frac{a_1}{1-r}$ converges

If $|r| \geq 1$ NO SUM $\sum^{\infty}$ DIVERGES

For the Test you should know how to do the following problems from your homework assignments this chapter:

11.1 p.601 (ex. 2) p.603(9, 15, 21, 24, 28)

11.2 p.608 (5, 6, 10, 19, 28, 36)

11.3 p.615 (3, 6, 13, 22, 28, 29)

11.4 p.622 - 623 (1, 2, 10, 16, 18, 21, 21)

11.5 p.628 - 629 (2,4,16,17,22, 24, 25, 32, 35)

11.6 p.637 (2, 3, 9, 10, 18, 19)