

DMY ASSIGNMENT 7 - SPRING 2007

$$\textcircled{1} (a) \sum_{i=3}^8 (2i-1) = 2 \sum_{i=3}^8 i - \sum_{i=3}^8 1 = 2(3+4+5+6+7+8) - (1+1+1+1+1+1) = 2 \cdot 33 - 6 = 60$$

$$(b) \sum_{k=-4}^3 (-k)^3 = (-(-4))^3 + (-(-3))^3 + (-(-2))^3 + (-(-1))^3 + (-0)^3 + (-1)^3 + (-2)^3 + (-3)^3$$

$$= 4^3 + 3^3 + 2^3 + 1^3 + 0^3 - 1^3 - 2^3 - 3^3 = 4^3 = 64$$

$$(c) \sum_{k=1}^n 3 = \underbrace{3+3+3+\dots+3}_{n \text{ sum.}} = 3n$$

$$(d) \sum_{i=3}^{12} 3 \cdot 2^i = \sum_{k=0}^9 3 \cdot 2^{k+3} = \sum_{k=0}^9 3 \cdot 8 \cdot 2^k = 24 \sum_{k=0}^9 2^k = 24 \cdot \frac{2^{10}-1}{1} = 24 \cdot 1023 = 24552$$

$$k=i-3$$

$$i=3 \Rightarrow k=0$$

$$i=12 \Rightarrow k=9$$

$$3 \cdot 2^i = 3 \cdot 2^{k+3} = 3 \cdot 2^k \cdot 2^3 = 3 \cdot 8 \cdot 2^k = 24 \cdot 2^k$$

$$\textcircled{2} a_k = 2a_{k-2} - a_{k-3} + a_{k-1} \text{ om } k \geq 4$$

$$a_1 = 10$$

$$a_2 = 3$$

$$a_3 = -6$$

$$a_4 = 2a_1 - a_2 + a_3 = 2 \cdot 10 - 3 - 6 = 11$$

$$a_5 = 2a_2 - a_3 + a_4 = 2 \cdot 3 - (-6) + 11 = 23$$

$$a_6 = 2a_3 - a_4 + a_5 = 2 \cdot (-6) - 11 + 23 = 0$$

$$a_7 = 2a_4 - a_5 + a_6 = 2 \cdot 11 - 23 + 0 = -1$$