Sec 1.1 day 3 page 23 (23-25, 27, 65-69)

(23) $f(x) = 3x^2 - x + 2$

$f(2) = 12$ $\quad f(-2) = 16$ $\quad f(a) = 3a^2 - a + 2$

$f(-a) = 3a^2 + a + 2$ $\quad f(a+1) = 3a^2 + 5a + 4$

$2f(a) = 6a^2 - 2a + 4$ $\quad f(2a) = 12a^2 - 2a + 2$

$f(a^2) = 3a^4 - a^2 + 2$ $\quad [f(a)]^2 = 9a^4 - 6a^3 + 13a^2 - 4a + 4$

$f(a+h) = 3a^2 + 6ah + 3h^2 - a - h + 2$

(24) $V(r+1) = \frac{4}{3}\pi(r^3 + 3r^2 + 3r + 1)$

$V(r+1) - V(r) = \boxed{\frac{4}{3}\pi(3r^2 + 3r + 1)}$

(25) $f(3+h) = 4 + 3(3+h) - (3+h)^2 = 4 - 3h - h^2$

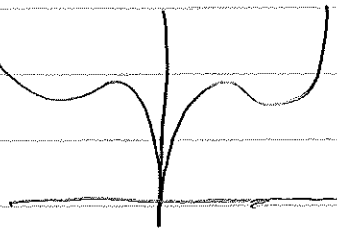
$f(3) = 4 + 3(3) - 3^2 = 4$

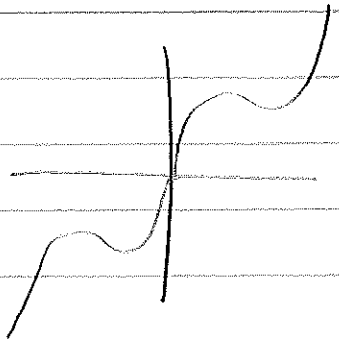
$\therefore \dfrac{f(3+h) - f(3)}{h} = \dfrac{4 - 3h - h^2 - 4}{h} =$

$= \dfrac{h(-3-h)}{h} = \boxed{-3-h}$

(27) $\dfrac{\frac{1}{x} - \frac{1}{a}}{x - a} = \dfrac{\frac{a-x}{ax}}{x-a} = \dfrac{a-x}{ax(x-a)} = \boxed{\dfrac{-1}{ax}}$

(65) a) $(-5, 3)$ $\quad$ b) $(-5, -3)$

(66) a) 

b) 

(67) $f(-x) = \frac{-x}{x^2+1} = -\left(\frac{x}{x^2+1}\right) = -f(x)$ ∴ odd

(68) $f(-x) = \frac{x^2}{x^4+1} = f(x)$ ∴ even

(69) $f(-x) = \frac{-x}{-x+1} \neq f(x) \neq -f(x)$ ∴ neither