EX 2.1

5. $f(a+h)=2(a+h)+5=2a+2h+5$

$f(-a)=2(-a)+5=-2a+5$

$f(a^2)=2(a^2)+5=2a^2+5$

$f(a-2h)=2(a-2h)+5=2a-4h+5$

$f(2a-h)=2(2a-h)+5=4a-2h+5$

9. $f(t)=\dfrac{2t^2}{\sqrt{t-1}}$. Therefore, $f(2)=\dfrac{2(2^2)}{\sqrt{2-1}}=8$

$f(a)=\dfrac{2a^2}{\sqrt{a-1}}$

$f(x+1)=\dfrac{2(x+1)^2}{\sqrt{(x+1)-1}}=\dfrac{2(x+1)^2}{\sqrt{x}}$

$f(x-1)=\dfrac{2(x-1)^2}{\sqrt{(x-1)-1}}=\dfrac{2(x-1)^2}{\sqrt{x-2}}$.

13. Since $x=-1<1$, $f(-1)=-\frac{1}{2}(-1)^2+3=\frac{5}{2}$.

Since $x=0<1$, $f(0)=-\frac{1}{2}(0)^2+3=3$.

Since $x=1\geq 1$, $f(1)=2(1^2)+1=3$.

Since $x=2\geq 1$, $f(2)=2(2^2)+1=9$.

21. Since $f(x)$ is a real number for any value of x, the domain of f is $(-\infty, \infty)$.

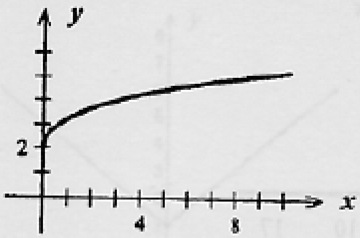
23. $f(x)$ is not defined at $x=0$ and so the domain of f is $(-\infty,0)\cup(0,\infty)$.

29. The denominator of f is zero when $x^2-1=0$ or $x=\pm 1$.
Therefore, the domain of f is $(-\infty,-1)\cup(-1,1)\cup(1,\infty)$.

33. The numerator is defined when $1-x\geq 0$, $-x\geq -1$ or $x\leq 1$.
Furthermore, the denominator is zero when $x=\pm 2$. Therefore, the domain is the set of all real numbers in $(-\infty,-2)\cup(-2,1]$.

39. $f(x) = 2 + \sqrt{x}$

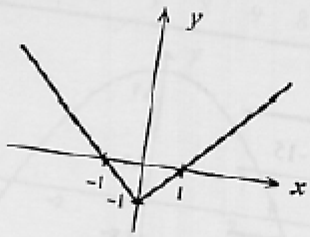
x	0	1	2	4	9	16
$f(x)$	2	3	3.41	4	5	6



$[0, \infty); [2, \infty)$

43. $f(x) = |x| - 1$

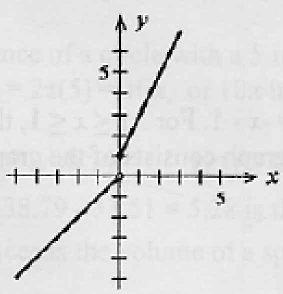
x	-3	-2	-1	0	1	2	3
$f(x)$	2	1	0	-1	0	1	2



$(-\infty, \infty); [-1, \infty)$

45. $f(x) = \begin{cases} x & \text{if } x < 0 \\ 2x+1 & \text{if } x \geq 0 \end{cases}$

x	-3	-2	-1	0	1	2	3
$f(x)$	-3	-2	-1	1	3	5	7



$(-\infty, \infty); (-\infty, 0) \cup [1, \infty)$