

#42

$$h(x) = \begin{cases} \frac{x^2 - 25}{x - 5}, & \text{if } x \neq 5 \\ 10, & \text{if } x = 5 \end{cases}$$

a)  $h(7) = \frac{7^2 - 25}{7 - 5} = \frac{24}{2} = 12$

$h(7) = 12$

b)  $h(0) = \frac{0^2 - 25}{0 - 5} = 5$

$h(0) = 5$

c)  $h(5) = 10$

#52

$$f(x) = \begin{cases} -\frac{1}{2}x^2, & \text{if } x < 1 \\ 2x + 1, & \text{if } x \geq 1 \end{cases}$$

x	2x+1
1	3
3	7

line

x	$-\frac{1}{2}x^2$
1	$-\frac{1}{2}$
0	0

parabola,  $\downarrow$   
 vertex:  $-\frac{0}{2 \cdot (-\frac{1}{2})} = 0$

-1	-1/2
-2	-2
-3	-9/2

range:  $(-\infty, 0] \cup [3, +\infty)$

