

$$f(x) = \begin{cases} x^3 & \text{if } x < 0 \\ 4 & \text{if } x = 0 \\ x^2 + 5 & \text{if } x > 0 \end{cases}$$

a) $f(-1) = (-1)^3 = -1$
 b) $f(0) = 4$
 c) $f(1) = 1^2 + 5 = 6$

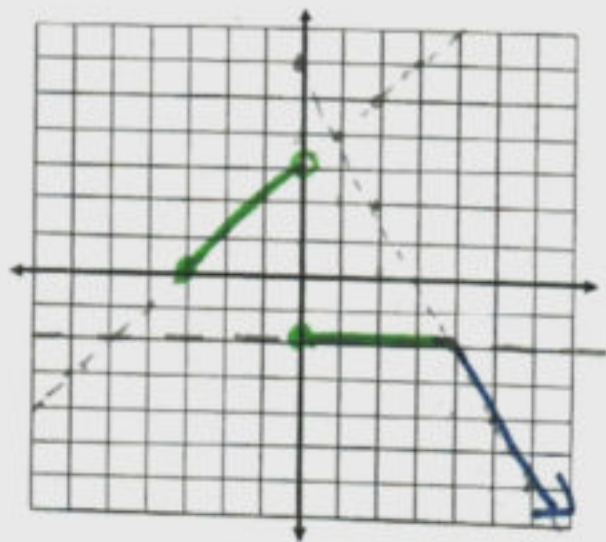
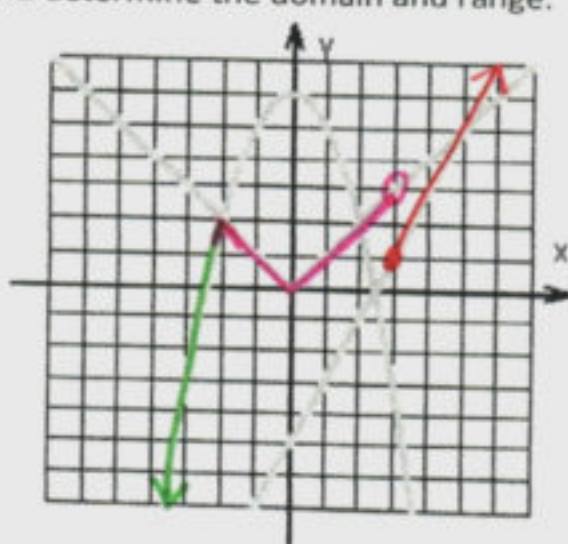
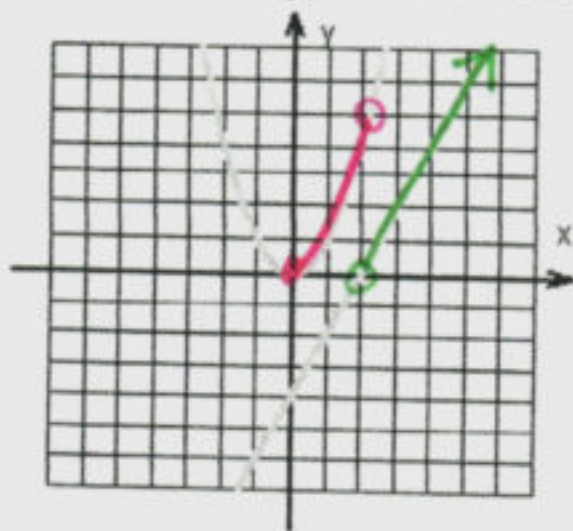
$$g(x) = \begin{cases} x+2 & \text{if } x \geq 3 \\ -x+2 & \text{if } x < 3 \end{cases}$$

d) $g(0) = -0+2 = 2$
 e) $g(3) = 3+2 = 5$
 f) $g(6) = 6+2 = 8$

$$h(x) = \begin{cases} |x| & \text{if } -3 < x < 4 \\ x-1 & \text{if } x = 4 \\ 2x^2 & \text{if } 4 < x < 6 \end{cases}$$

g) $h(-1) = 1-1 = 0$
 h) $h(4) = 4-1 = 3$
 i) $h(7) = \emptyset$

Graph the following piecewise functions and determine the domain and range.



$$k(x) = \begin{cases} x^2 & \text{if } 0 \leq x < 2 \\ 2x-4 & \text{if } x \geq 2 \end{cases}$$

D: $[0, 2) \cup [2, \infty)$
 R: $[0, \infty)$

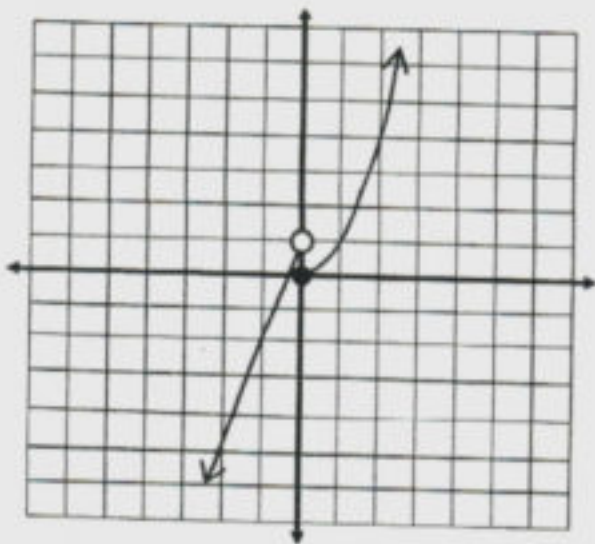
$$m(x) = \begin{cases} -x^2 + 6 & \text{if } x < -2 \\ |x| & \text{if } -2 \leq x < 3 \\ 2x-5 & \text{if } x \geq 3 \end{cases}$$

D: $(-\infty, \infty)$
 R: $(-\infty, \infty)$

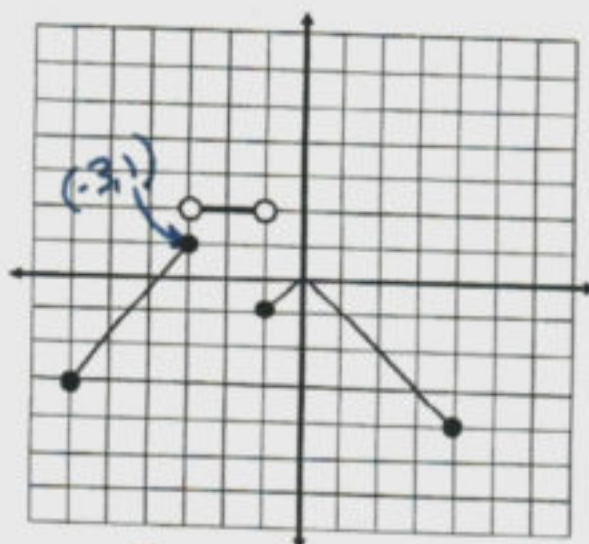
$$p(x) = \begin{cases} x+3 & \text{if } -3 \leq x < 0 \\ -2 & \text{if } 0 \leq x < 4 \\ -2x+6 & \text{if } x \geq 4 \end{cases}$$

D: $[-3, \infty)$
 R: $(-\infty, -2] \cup [0, 3)$

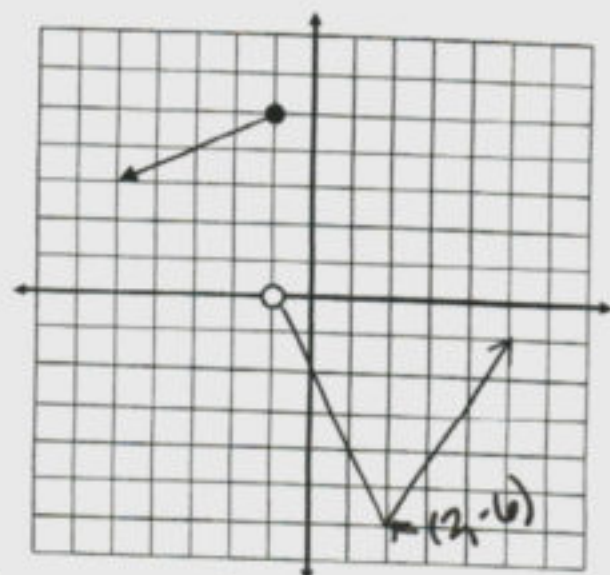
Write a piecewise function that models the graph.



$$becky(x) = \begin{cases} 3x+1 & \text{if } x < 0 \\ x^2 & \text{if } x \geq 0 \end{cases}$$



$$r(x) = \begin{cases} \frac{4}{3}(x+3)+1 & \text{if } -6 \leq x < -3 \\ 2 & \text{if } -3 \leq x < -1 \\ -|x| & \text{if } -1 \leq x \leq 4 \end{cases}$$



$$meg(x) = \begin{cases} \frac{1}{2}(x+1)+5 & \text{if } x \leq -1 \\ -2x-2 & \text{if } -1 < x < 2 \\ \frac{5}{3}(x+2)-6 & \text{if } x \geq 2 \end{cases}$$