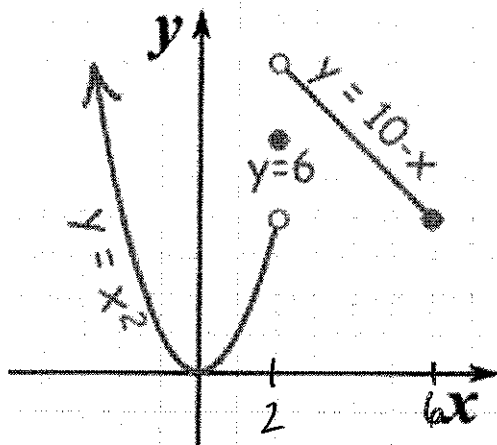


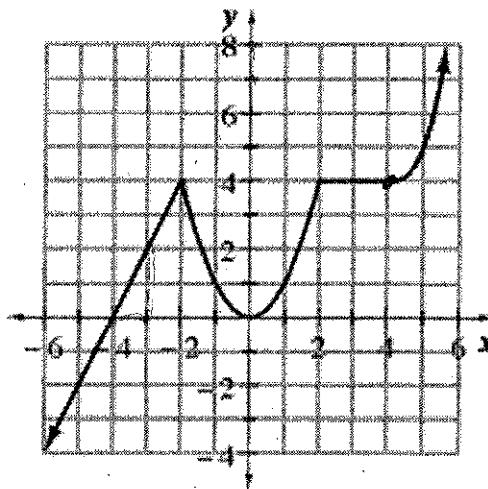
### 1.3 Piecewise Functions

Name KEY

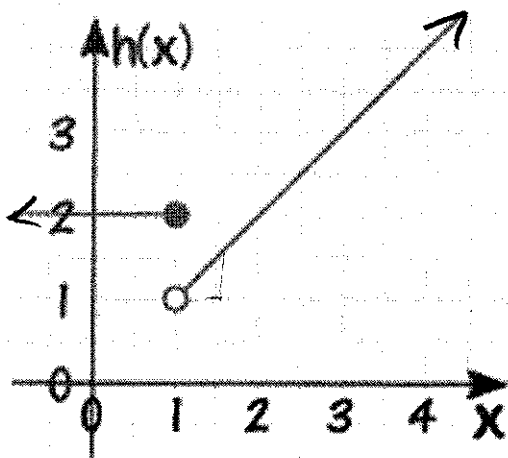
For each of the following, write the functions with the proper domains.



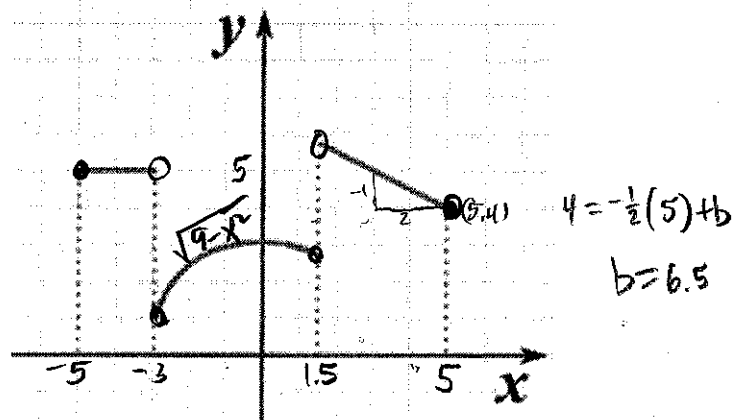
$$f(x) = \begin{cases} x^2 & \text{if } (-\infty, 2) \\ 6 & \text{if } x = 2 \\ 10 - x & \text{if } (2, 6] \end{cases}$$



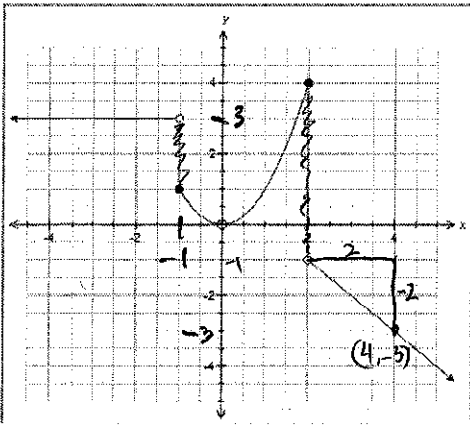
$$f(x) = \begin{cases} 2x + 8 & \text{if } (-\infty, -2) \\ x^2 & \text{if } (-2, 2) \\ 4 & \text{if } (2, 4] \\ (x - 4)^2 + 4 & \text{if } (4, \infty) \end{cases}$$



$$f(x) = \begin{cases} 2 & \text{if } (-\infty, 1] \\ x & \text{if } (1, \infty) \end{cases}$$



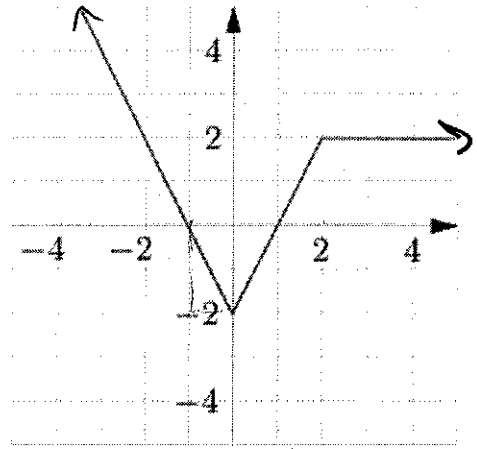
$$f(x) = \begin{cases} 5 & \text{if } [-5, -3) \\ \sqrt{9 - x^2} & \text{if } [-3, 1.5] \\ -\frac{1}{2}x + 6.5 & \text{if } (1.5, 5] \end{cases}$$



$$-3 = -1(4) + b$$

$$b = 1$$

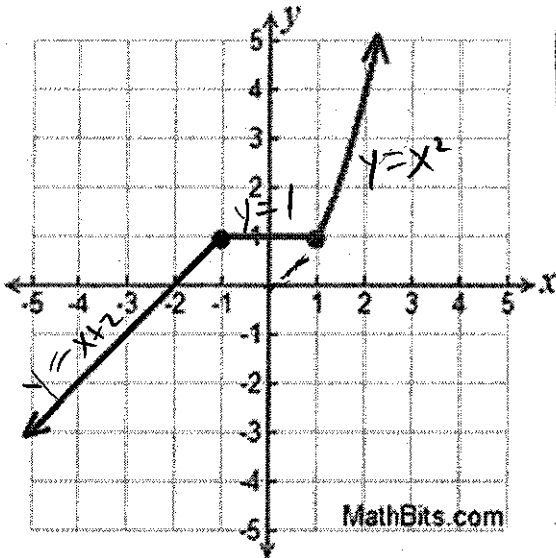
$$f(x) = \begin{cases} 3 & \text{if } (-\infty, -1) \\ x^2 & \text{if } [-1, 2] \\ -x+1 & \text{if } (2, \infty) \end{cases}$$



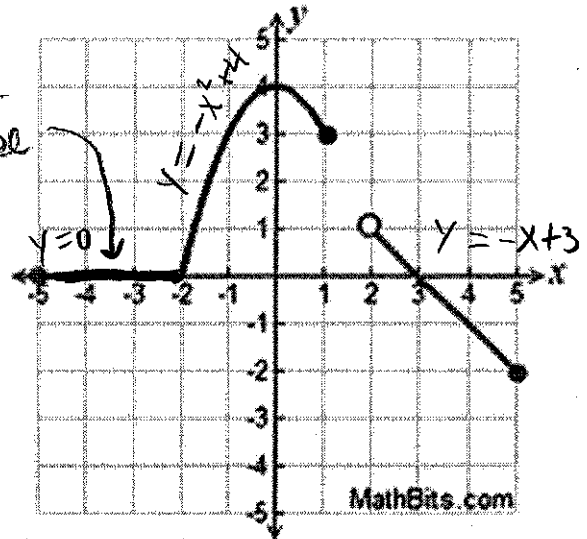
w/o Absolute value      w/ Absolute value

$$f(x) = \begin{cases} -2x-2 & \text{if } (-\infty, 0] \\ 2x-2 & \text{if } (0, 2] \\ 2 & \text{if } (2, \infty) \end{cases}$$

$$f(x) = \begin{cases} 2|x|-2 & \text{if } (-\infty, 2] \\ 2 & \text{if } (2, \infty) \end{cases}$$



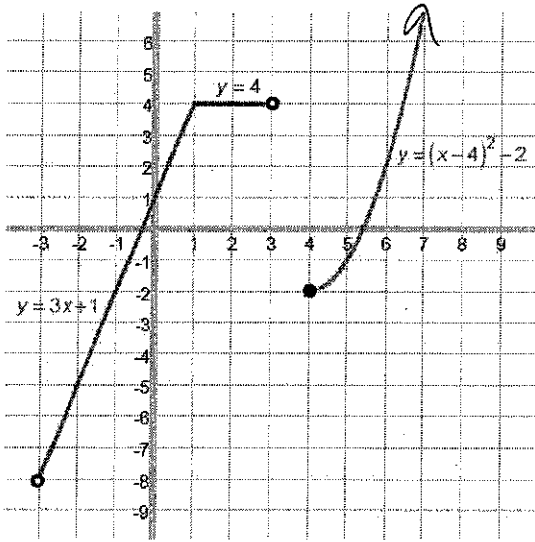
Difficult to see



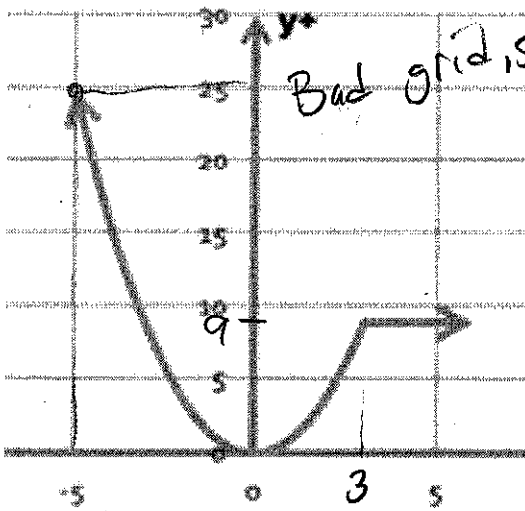
$$f(x) = \begin{cases} x+2 & \text{if } (-\infty, -1] \\ 1 & \text{if } (-1, 1] \\ x^2 & \text{if } (1, \infty) \end{cases}$$

$$f(x) = \begin{cases} 0 & \text{if } (-\infty, -2] \\ -x^2+4 & \text{if } (-2, 1] \\ -x+3 & \text{if } (1, 5] \end{cases}$$

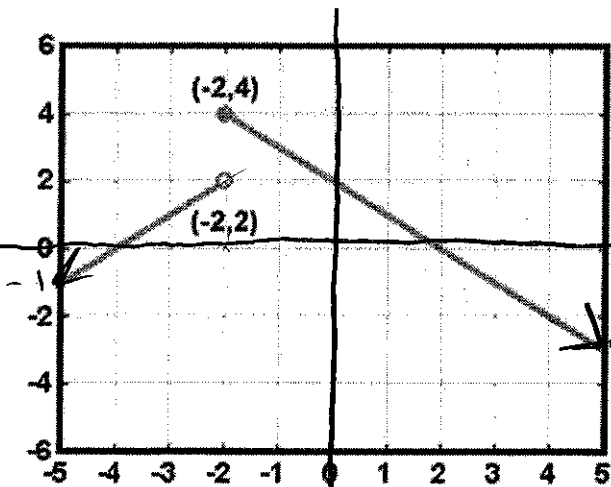
On your own:



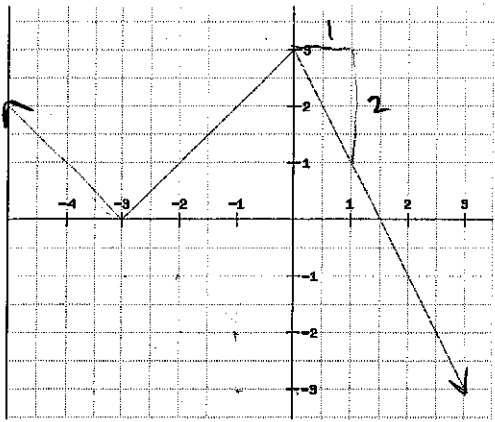
$$f(x) = \begin{cases} 3x+1 & \text{if } (-3, 1] \\ 4 & \text{if } (1, 3) \\ (x-4)^2-2 & \text{if } [4, \infty) \end{cases}$$



$$f(x) = \begin{cases} x^2 & \text{if } (-\infty, 3] \\ 9 & \text{if } (3, \infty) \end{cases}$$



$$f(x) = \begin{cases} x+4 & \text{if } (-\infty, -2) \\ -x+2 & \text{if } [-2, \infty) \end{cases}$$



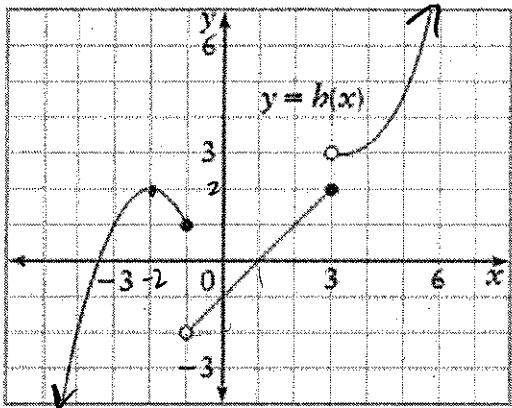
1/0 Abs. value

1/0 Abs. value

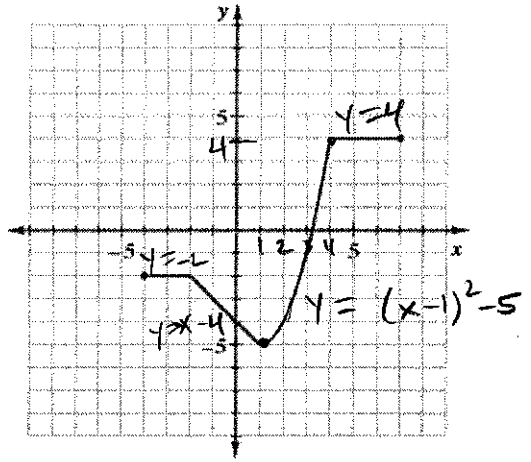
$$f(x) = \begin{cases} -x-3 & \text{if } (-\infty, -3] \\ x+3 & \text{if } (-3, 0] \\ -\frac{1}{2}x+3 & \text{if } (0, \infty) \end{cases}$$

$$f(x) = \begin{cases} |x+3| & \text{if } (-\infty, 0] \\ -\frac{1}{2}x+3 & \text{if } (0, \infty) \end{cases}$$

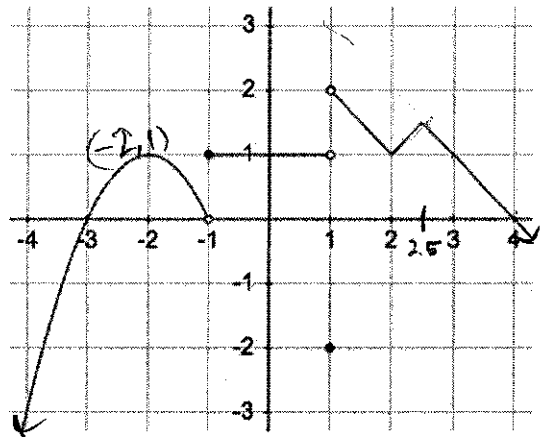
Challenge Accepted!



$$h(x) = \begin{cases} -(x+2)^2+2 & \text{if } (-\infty, -1] \\ x-1 & \text{if } (-1, 3] \\ b(x) & \text{if } (3, \infty) \end{cases}$$



$$f(x) = \begin{cases} -2 & \text{if } [-4, -2] \\ -x-4 & \text{if } (-2, 1] \\ (x-1)^2-5 & \text{if } (1, 4] \\ 4 & \text{if } (4, 7] \end{cases}$$



$$f(x) = \begin{cases} -(x+2)^2+1 & \text{if } (-\infty, -1) \\ 1 & \text{if } [-1, 1) \\ |x-2|+1 & \text{if } (1, 2.5] \\ -x+4 & \text{if } (2.5, \infty) \end{cases}$$