

MATH2 (814012) – SPRING 2006

WORKSHEET 6

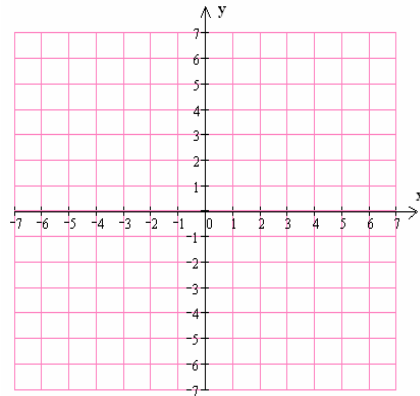
Question (1): Given the function $f(x) = \begin{cases} 2x-1 & \text{if } 2 \leq x \leq 6 \\ x^2+3 & \text{if } x < 2 \end{cases}$

(1) Graph $f(x)$.

(2) Find the domain.

(3) Find the range

(4) Evaluate: $\frac{f(5) + 5f(2)}{3f(0)} =$



Question (2): Let $f(x) = x^2 - 3 + 2x$. Find the following:

(1) Vertex =

(2) y-intercept =

(3) x-intercept =

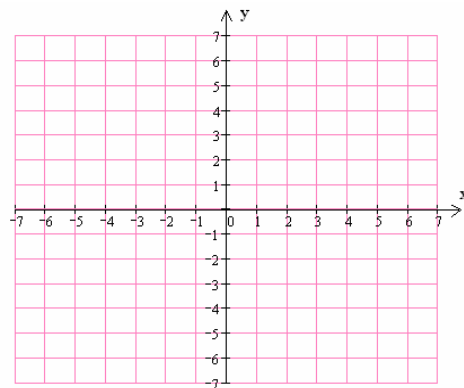
(4) Graph $f(x)$.

(5) Domain =

(6) Range =

(7) Maximum or Minimum value =

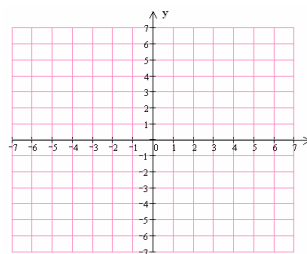
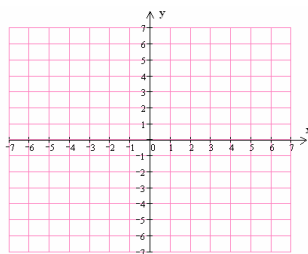
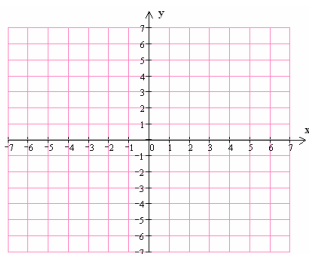
(8) Intervals on which $f(x)$ is increasing or decreasing =



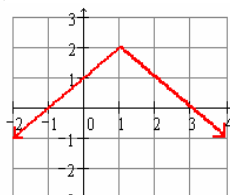
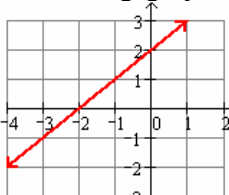
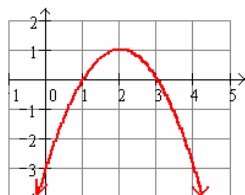
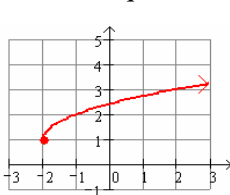
Question (3):

(1) Use transformations to graph the following functions. Start from basic function (write all steps)

(a) $f(x) = -(x-2)^2 + 3$ (b) $g(x) = |x+1| - 2$ (c) $h(x) = 1 - \sqrt{x-1}$



(2) Give an equation for the functions in the following graphs (start from basic function).



(3) The graph of the g , in each case, is formed by applying the indicated transformations to f . Find an equation for the function g and graph it.

- The graph of $f(x) = \sqrt{x}$ is shifted 2 units to the left and 3 units up.
- The graph of $f(x) = |x|$ is reflected in the x -axis and shifted 3 units to the right.
- The graph of $f(x) = x^2$ is shifted 3 units to the right and reflected in the x -axis then shifted 2 units down.