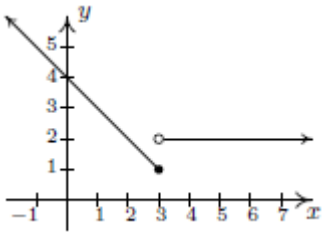
Worksheet 2 KEY – Graphs of Functions (§3.3)

1.

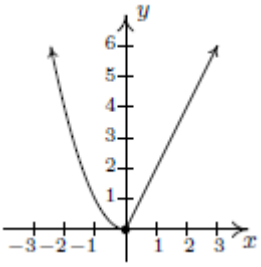
(a) Domain: $\{-4,-3,-2,-1,0,1\}$, Range: $\{-1,0,1,2,3,4\}$, Not a function
(b) Domain: $\mathbb{R}$, Range: $\mathbb{R}$, Is a function
(c) Domain: $[2,\infty)$, Range: $[0,\infty)$, Is a function
(d) Domain: $[-2,\infty)$, Range: $(-\infty,3]$, Is a function
(e) Domain: $[-5,4)$, Range: $[-4,4)$, Is a function
(f) Domain: $\{x: x \leq -1 \text{ or } x \geq 1\}$, Range: $\mathbb{R}$, Not a function

2.

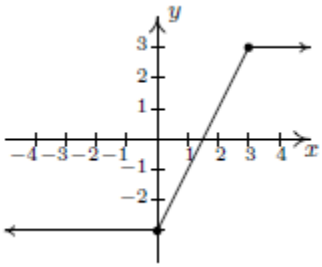
(a)



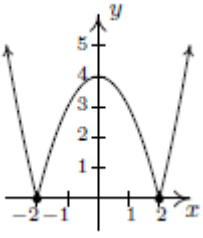
(b)



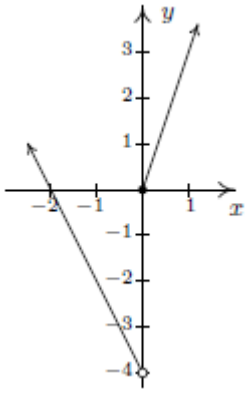
(c)



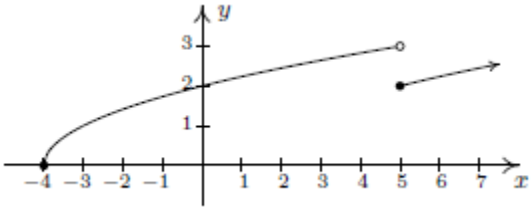
(d)



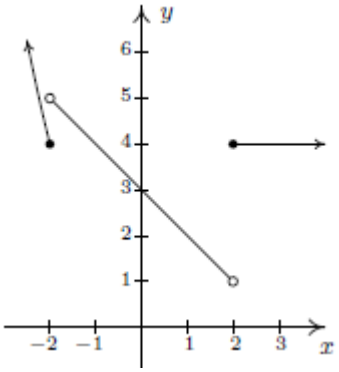
(e)



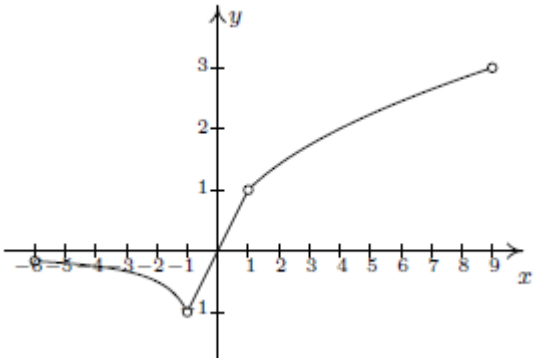
(f)



(g)



(h)



3.

(a) $\{x: x \neq -6,2\}$
(b) $\mathbb{R}$
(c) $(-6,-4) \cup (-1,2) \cup (2,6)$
(d) $(-\infty,-6) \cup (-4,-1) \cup (4,\infty)$
(e) $(-4,2)$ and $(6,3)$
(f) $(-1,-3)$
(g) $f(-5) = 0$
(h) $f(-1) = -3$
(i) Negative
(j) Positive
(k) Positive

4.

(a) $\mathbb{R}$
(b) $\mathbb{R}$
(c) $(-\infty,2) \cup (5,\infty)$
(d) $(2,5)$
(e) $(2,4)$
(f) $(5,-2)$
(g) $g(2) = 4$
(h) $g(-1) = 0$
(i) $x = -1,4,6$
(j) Positive
(k) $(-1,4) \cup (6,\infty)$
(l) $(-\infty,-1] \cup [4,6]$

5.

(a) $\mathbb{R}$
(b) $\mathbb{R}$
(c) $(-\infty,-3) \cup (1,\infty)$
(d) $(-3,1)$
(e) $(-3,5)$
(f) $(1,-3)$
(g) $h(-1) = 1$
(h) $x = -3,5$
(i) Negative
(j) Negative
(k) Positive

6.

(a) $[-5,3]$
(b) $[-5,4]$
(c) $(-5,-3) \cup (0,2)$
(d) $(-3,0) \cup (2,3)$
(e) $(-3,4)$ and $(2,3)$
(f) $(0,-1)$
(g) $f(-2) = 2$
(h) $f(3) = 1$
(i) $x = -4,-1,1$
(j) Abs max is 4. Abs min is -5.
(k) $[-4,-1] \cup [1,3]$
(l) $[-5,-4] \cup [-1,1]$

7.

(a) $[-4,4]$
(b) $[-5,5)$
(c) $(-2,2)$
(d) $(-4,-2) \cup (2,4)$
(e) None
(f) $(-2,-5), (2,3)$
(g) $g(2) = 3$
(h) $x = -4,0,4$
(i) Negative
(j) No abs max. Abs min is -5.
(k) $[0,4]$
(l) $[-4,0]$