Math 1650 Homework Solutions
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§ 2.2

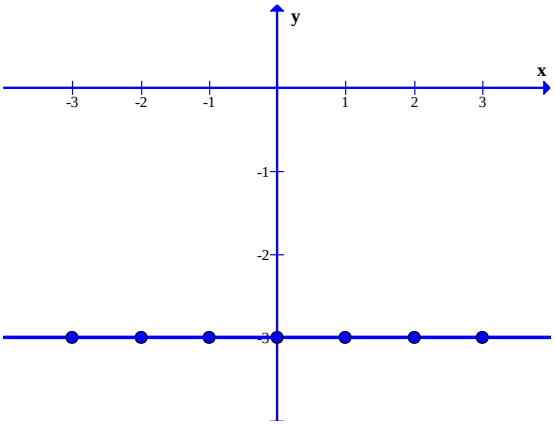
2 – 24 (even), 38 – 50 (even), 56, 62 – 72 (even)

Solutions

1 – 22 Sketch the graph of the function by first making a table of values.

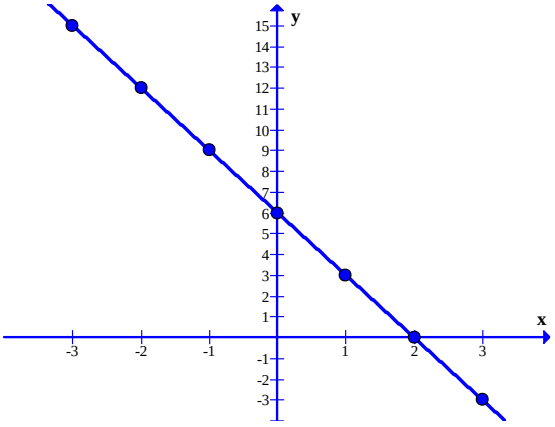
2) $f(x) = -3$

x	$f(x)$
-3	-3
-2	-3
-1	-3
0	-3
1	-3
2	-3
3	-3



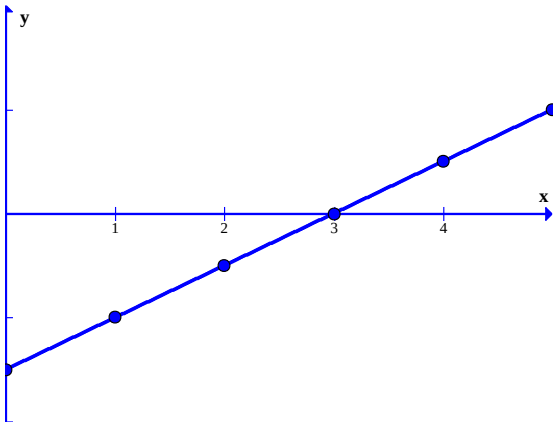
4) $f(x) = 6 - 3x$

x	$f(x)$
-3	15
-2	12
-1	9
0	6
1	3
2	0
3	-3



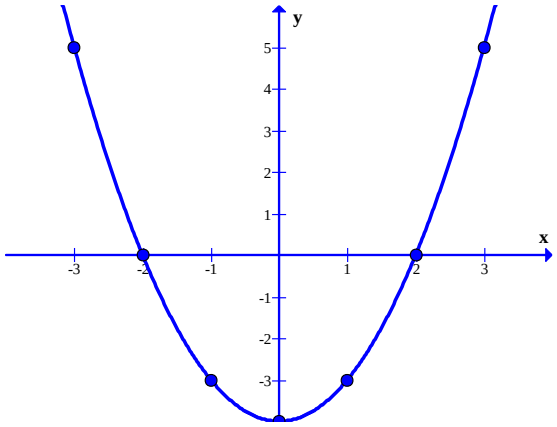
6) $f(x) = \frac{x-3}{2}$ $0 \le x \le 5$

x	$f(x)$
0	-1.5
1	-1
2	-.5
3	0
4	.5
5	1



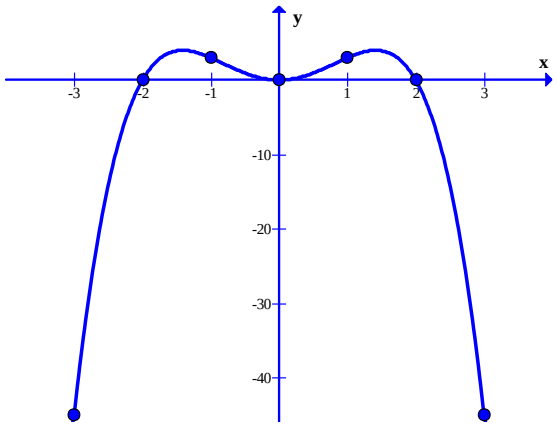
8) $f(x) = x^2 - 4$

x	$f(x)$
-3	5
-2	0
-1	-3
0	-4
1	-3
2	0
3	5



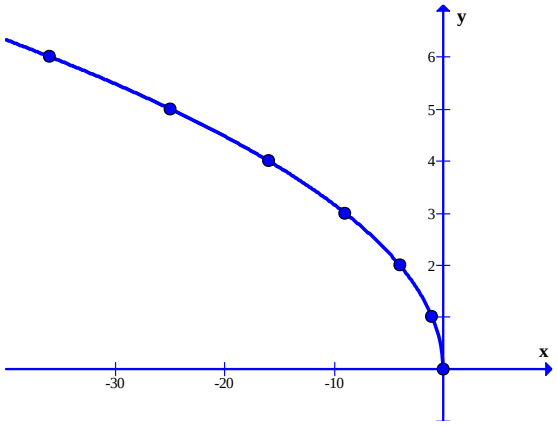
10) $f(x) = 4x^2 - x^4$

x	$f(x)$
-3	-45
-2	0
-1	3
0	0
1	3
2	0
3	-45



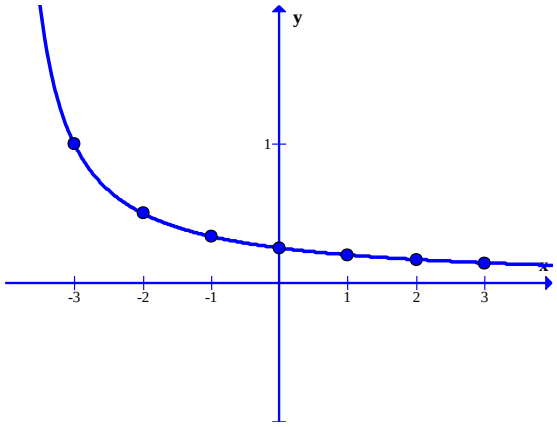
12) $f(x) = \sqrt{-x}$

x	$f(x)$
-36	6
-25	5
-16	4
-9	3
-4	2
-1	1
0	0



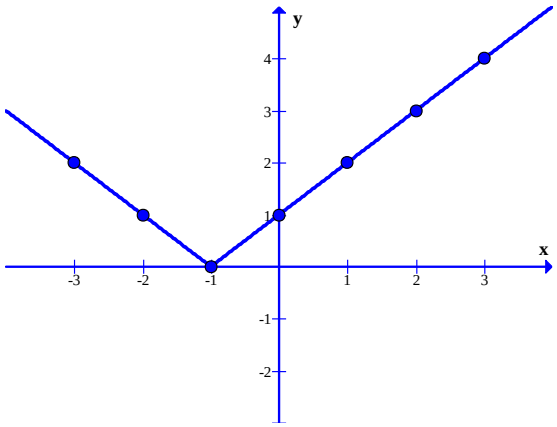
14) $f(x) = \frac{1}{x+4}$

x	$f(x)$
-3	1
-2	.5
-1	.333
0	.25
1	.2
2	.167
3	.143



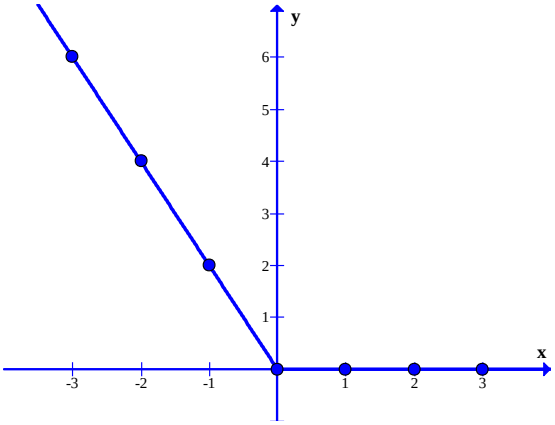
16) $f(x) = |x + 1|$

x	$f(x)$
-3	2
-2	1
-1	0
0	1
1	2
2	3
3	4



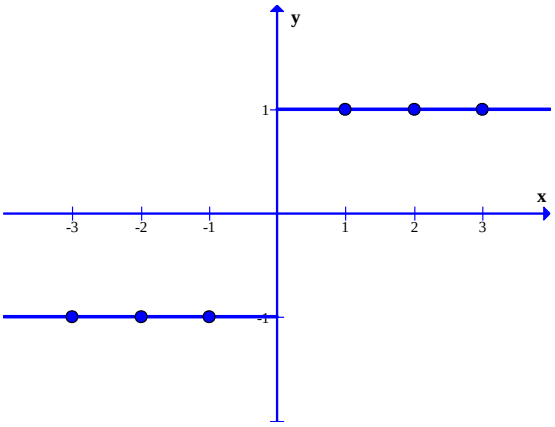
18) $f(x) = |x| - x$

x	$f(x)$
-3	6
-2	4
-1	2
0	0
1	0
2	0
3	0



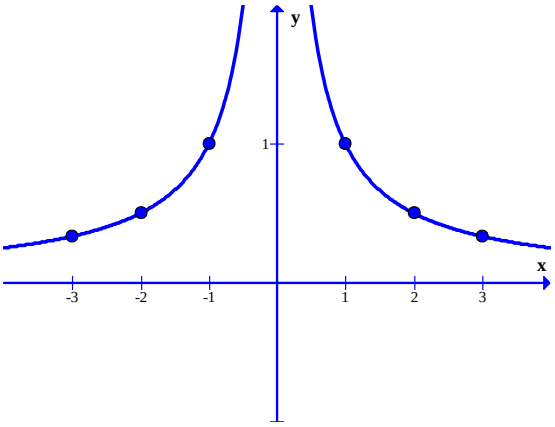
20) $f(x) = \frac{x}{|x|}$

x	$f(x)$
-3	-1
-2	-1
-1	-1
0	undef
1	1
2	1
3	1



22) $f(x) = \frac{|x|}{x^2}$

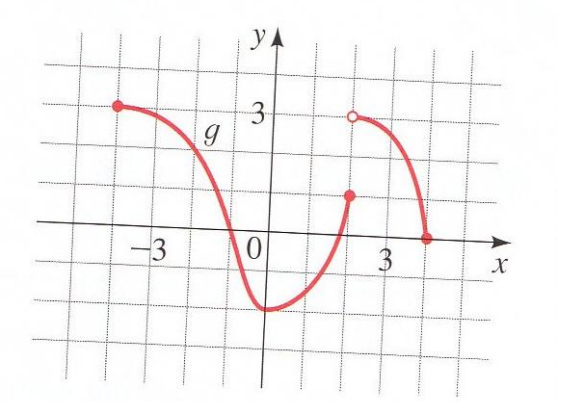
x	$f(x)$
-3	.333
-2	.5
-1	1
0	undef
1	1
2	.5
3	.333



24) The graph of a function g is given.

(a) Find $g(-4), g(-2), g(0), g(2),$ and $g(4)$

(b) Find the domain and range of g.



$g(-4) = 3$

$g(-2) = 2$

$g(0) = -2$

$g(2) = 1$

$g(4) = 0$

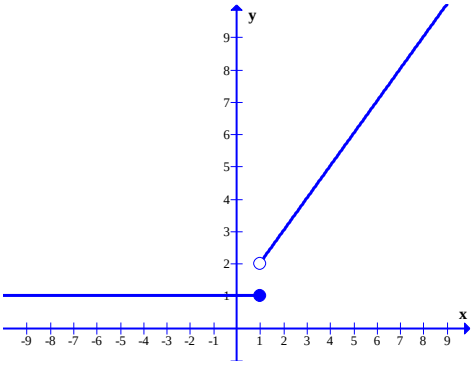
domain of $g = [-4,4]$

range of $g = [-2,3]$

37 – 50 Sketch the graph of the piecewise defined function.

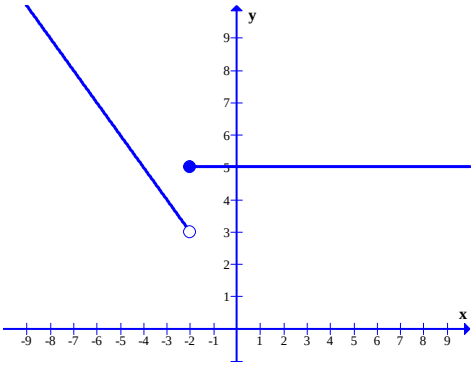
38)

$$f(x) = \begin{cases} 1 & x \leq 1 \\ x + 1 & x > 1 \end{cases}$$



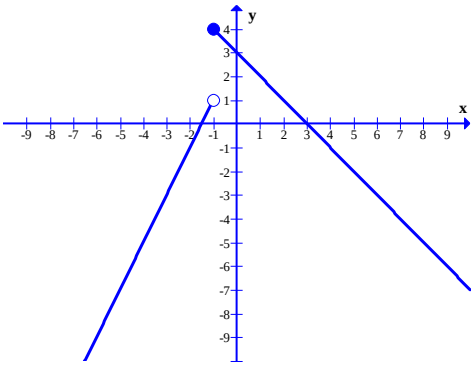
40)

$$f(x) = \begin{cases} 1 - x & x < -2 \\ 5 & x \geq -2 \end{cases}$$



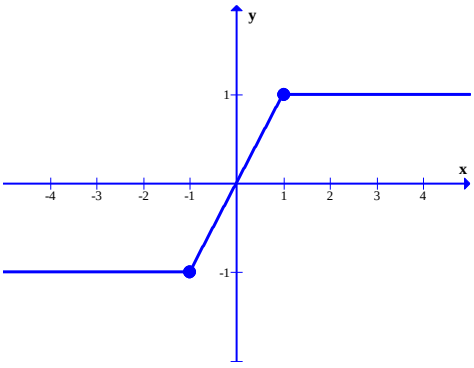
42)

$$f(x) = \begin{cases} 2x + 3 & x < -1 \\ 3 - x & x \geq -1 \end{cases}$$



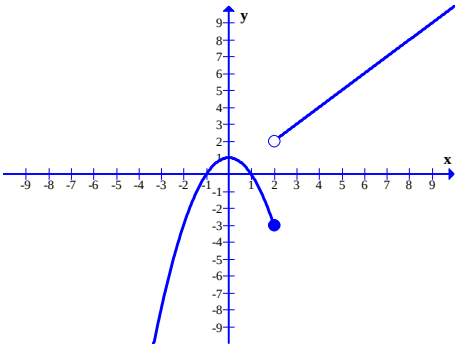
44)

$$f(x) = \begin{cases} -1 & x < -1 \\ x & -1 \leq x \leq 1 \\ 1 & x > 1 \end{cases}$$



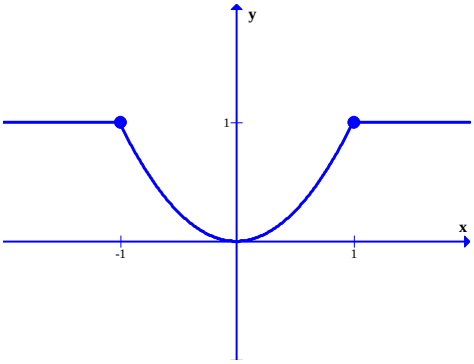
46)

$$f(x) = \begin{cases} 1 - x^2 & x \leq 2 \\ x & x > 2 \end{cases}$$



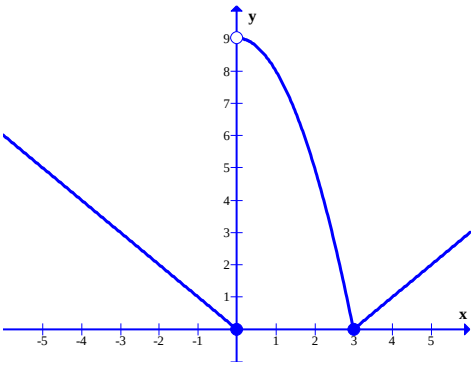
48)

$$f(x) = \begin{cases} x^2 & |x| \le 1 \\ 1 & |x| > 1 \end{cases}$$



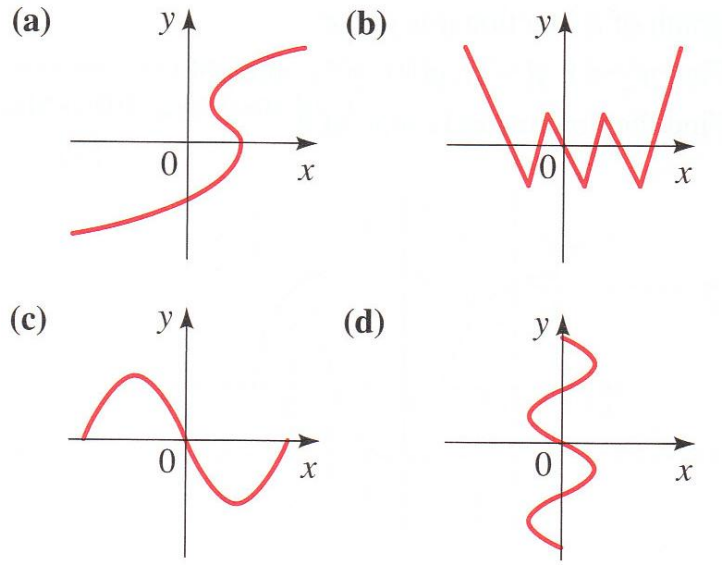
50)

$$f(x) = \begin{cases} -x & x \le 0 \\ 9 - x^2 & 0 < x \le 3 \\ x - 3 & x > 3 \end{cases}$$



55 – 56 Determine whether the curve is the graph of a function of x.

56)



(a) no

(b) yes

(c) yes

(d) no

61 – 72 Determine whether the equation defines y as a function of x.

62) $3x + 7y = 21$

Solving for y, we get

$$y = -\frac{3}{7}x + 3$$

So, yes the equation does define y as a function of x.

64) $x^2 + (y-1)^2 = 4$

Solving for *y*, we get

$$y = 1 \pm \sqrt{4 - x^2}$$

So, no the equation does not define *y* as a function of *x*.

68) $\sqrt{x} + y = 12$

Solving for *y*, we get

$$y = -\sqrt{x} + 12$$

So, yes the equation does define *y* as a function of *x*.

70) $2x + |y| = 0$

The easiest way her is to note that when x = -1, both y = 2 and -2 solve the equation. So, no the equation does not define *y* as a function of *x*.

72) $x = y^4$

Simply put, no the equation does not define *y* as a function of *x*.