Solutions of Practice for Section 1.4
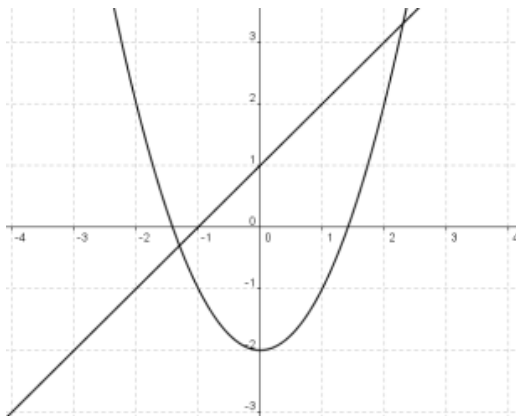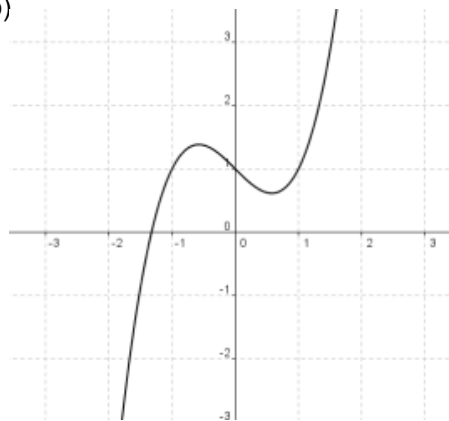
1. Determine whether the following relations are functions or not.
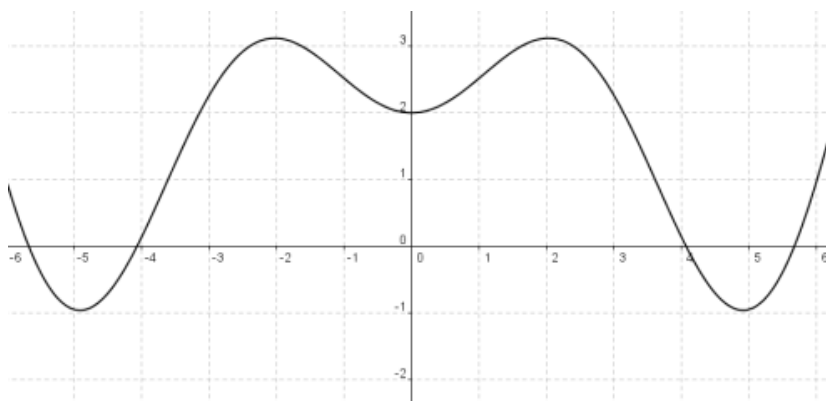
a)

b)

c) $y=3x-2$. Is y a function of x?

d) $x^2+y^2=9$. Is y a function of x?

e)   (student number, student grade)

f)   (student height, student grade)

2. For each of the following functions determine:
- x **and** y **intercepts**
- **symmetries**
- *f(-2)*
- *f(3)*
- *c*, **if** *f(c) = -1*
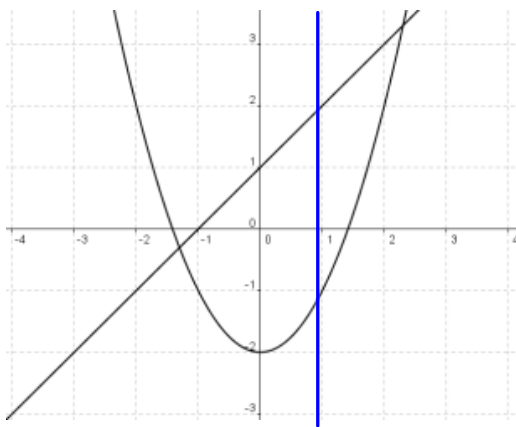
a) $f(x)=x^2-2$

b)

c) $\begin{cases} x-2, & x < 1 \\ 3-x^2, & x \geq 1 \end{cases}$

The following problems will help you practice the material you learned today. Once done, you can work on your WeBWorK homework. Once you are finished, you can check your solutions.
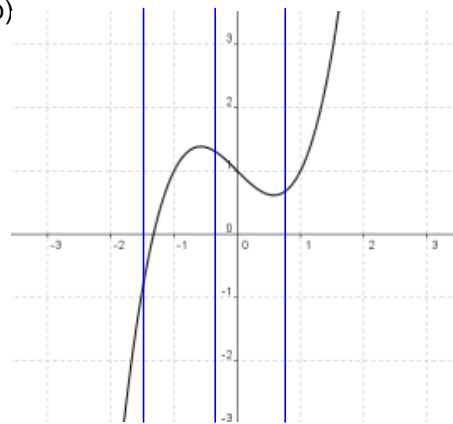
1. Determine whether the following relations are functions or not.

a)

No, because there is a vertical line that intersects the graph in more than one point.

b)

Yes, because no vertical line intersects the graph in more than one point.

c) $y=3x-2$. Is y a function of x?
        Yes, because for each value of x we will only get a single y value.

d) $x^2+y^2=9$. Is y a function of x?
        No, because if $x=0$, we see that $y^2=9$, and there are two numbers whose square is 9: -3 and 3, so for $x=0$, we'd get two values for y.

e)   (student number, student grade)
        Yes, because to each student number we associate only one grade.

f)   (student height, student grade)
        No, unless all students with same height get the same grade, which is highly unlikely.

2. For each of the following functions determine:
- *x* and *y* intercepts
- *f(-2)*
- *f(3)*
- *c*, if *f(c) = -1*
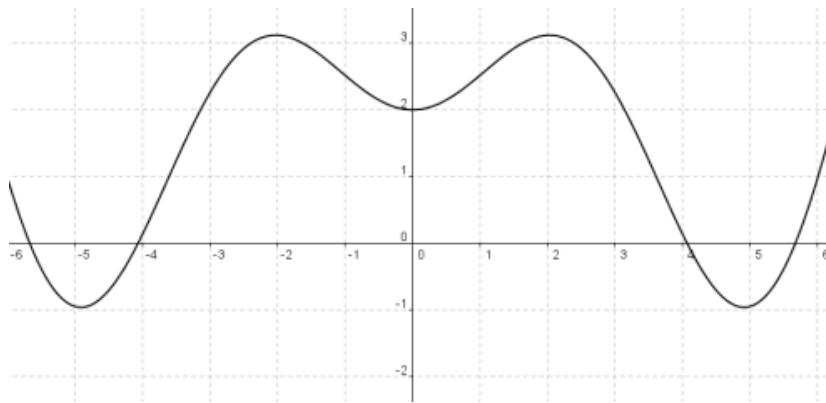
a)   *f(x)=x²-2*

       y-intercept: *(0,-2)*
       x-intercept: *(-√2,0), (√2,0)*
       f(-2)=2
       f(3)=7
       c=-1, or *c=1*

b)

       y-intercept: *(0,2)*
       x-intercept: *(-4,0), (4,0)* (-5.5, 0) (5.5, 0)
       f(-2)=3.1
       f(3)=2.2
       c=-4.8, or *c=4.8*

c)
$$\begin{cases} x-2, & x<1 \\ 3-x^2, & x\geq 1 \end{cases}$$

       y-intercept: *(0,-2)*
       x-intercept: *(-√3,0), (√3,0)*
       f(-2)=-4
       f(3)=-6
       c=-2, or *c=2*