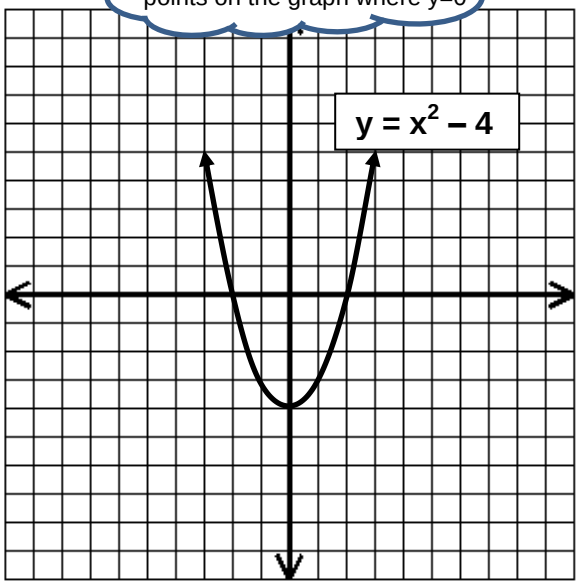
SOLVING QUADRATIC EQUATIONS BY GRAPHING

A **quadratic equation** is an equation that can be written in the form $ax^2 + bx + c = 0$, which is called the **standard form of a quadratic equation**.

One way to solve a quadratic equation is to graph the related function $y = ax^2 + bx + c$. The **solutions** of the equation are the x-intercepts of the related function.

1) To solve $x^2 - 4 = 0$, look at the graph of $y = x^2 - 4$:

That's because x-intercepts are points on the graph where y=0



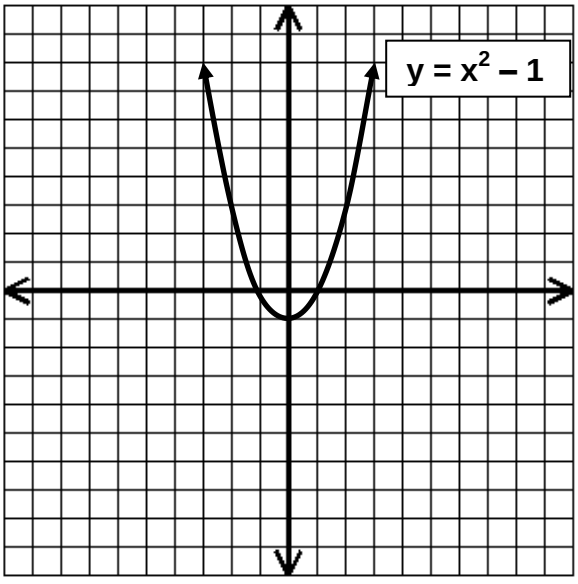
The solutions of $x^2 - 4 = 0$ are the x-intercepts _____ and _____.

These words all mean the same thing and are used interchangeably:

solutions
x-intercepts
roots
zeros

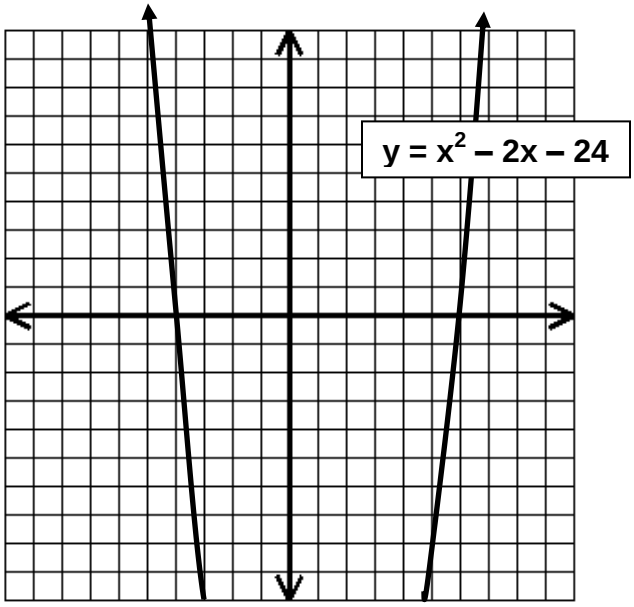
Answer the following using the graph given.

2) Solve $x^2 - 1 = 0$



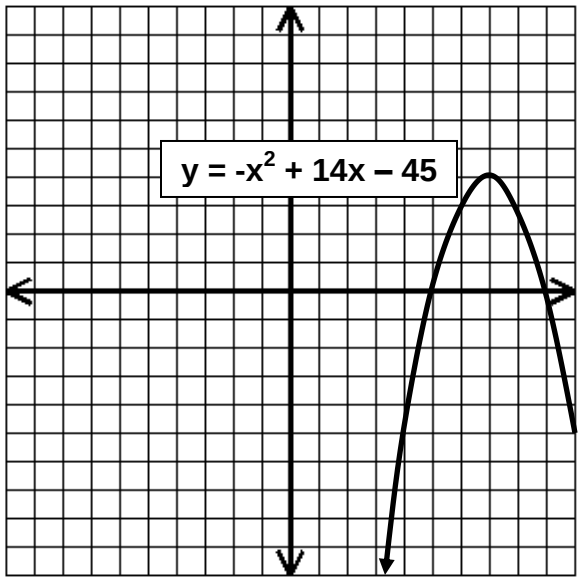
Solutions: _____

3) Find the roots of $y = x^2 - 2x - 24$.



Roots: _____

4) Find the solutions that satisfy $-x^2 + 14x = 45$ using the graph below.



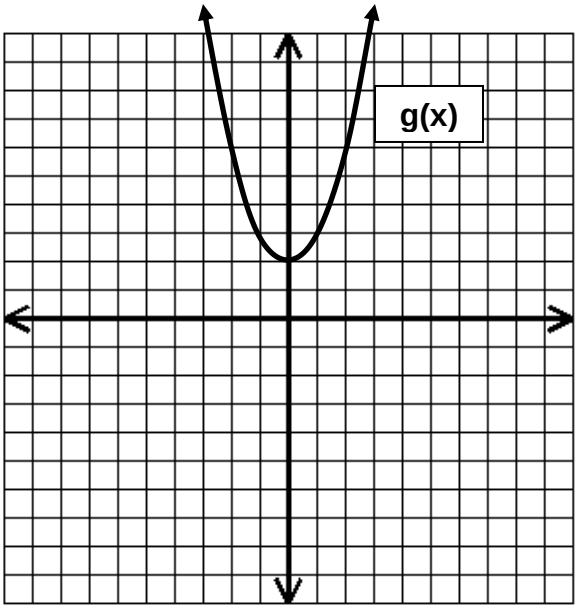
Solutions: _____

Vertex: _____ Max or Min

Domain: _____

Range: _____

5) Determine the roots of the function g(x) graphed below.



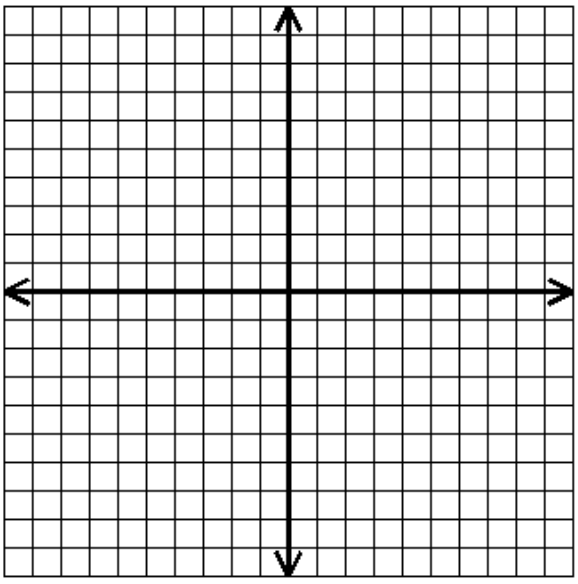
Roots: _____

Vertex: _____ Max or Min

Domain: _____

Range: _____

6) The function h(x) has zeros at -4 and 2 and a range of all real numbers less than or equal to 9. Sketch a graph of h(x).



Axis of symmetry: _____

Vertex: _____ Max or Min

x-intercepts: _____

Roots: _____

Solutions: _____

Domain: _____

Range: _____