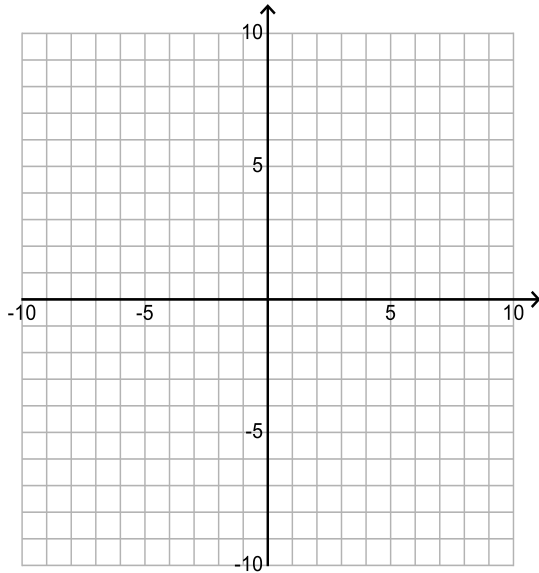


## Algebra II – Chapter 4 Test

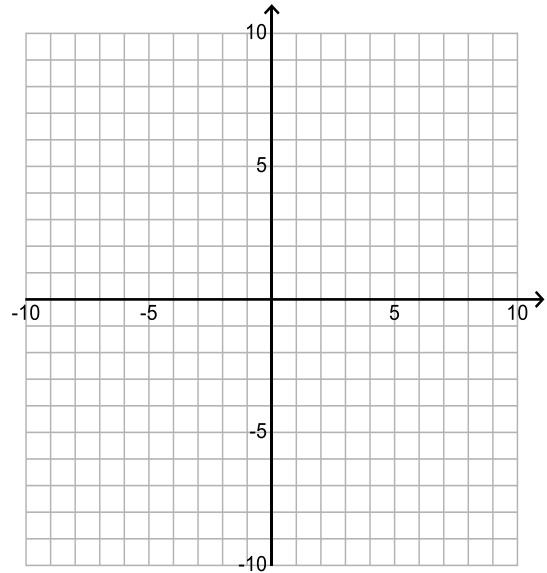
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Graph the function. Label the vertex and axis of symmetry. Identify the solutions (zeros) of the function (round to the nearest hundredth if needed).

1)  $f(x) = x^2 - x - 6$

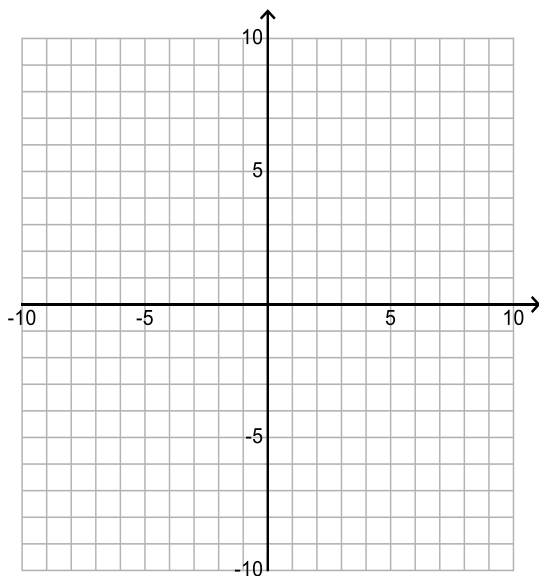


2)  $f(x) = -(x + 2)^2 + 5$



Graph the quadratic inequality.

3)  $f(x) < 2x^2 - 12x + 10$



**Solve the quadratic by factoring. Show your work. Solutions should be in simplest radical form:**

4)  $x^2 - 11x + 30 = 0$

5)  $w^2 - 18w + 81 = 0$

6)  $2s^2 + 7s = 15$

7)  $r^2 + 2r = 0$

**Simplify the expressions:**

8)  $(3 + 4i) - (2 - 5i)$

9)  $(2 - 7i)(1 + 2i)$

**Solve using square roots. Solutions should be in simplest radical form :**

10)  $3x^2 + 7 = 55$

11)  $x^2 + 11 = 3$

12)  $(x + 2)^2 - 12 = 36$

Solve by completing the square. Solutions should be in simplest radical form:

13)  $x^2 - 4x + 3 = 0$

14)  $z^2 + 8z + 11 = 0$

Solve using the quadratic formula: Show your work. Solutions should be in simplest radical form.

15)  $3x^2 + 10x - 5 = 0$

16)  $x^2 + 5x + 2 = 0$

Write a quadratic function whose graph has the given characteristics.

17) *vertex:* (3, 5) *point:* (2, -1)

Find the discriminant of the equation and give the number and type of solutions of the equation.

18)  $x^2 + 6x - 16 = 0$

19)  $x^2 + 5x - 7 = 0$

20) Given  $ax^2 + bx + c = 0$ , write the formula to find  $x$  using the quadratic formula.

**Bonus:**

Solve the quadratic inequality.

$$2x^2 - 7x - 4 \leq 0$$

Multiply by the complex conjugate:

$$3 - 7i$$