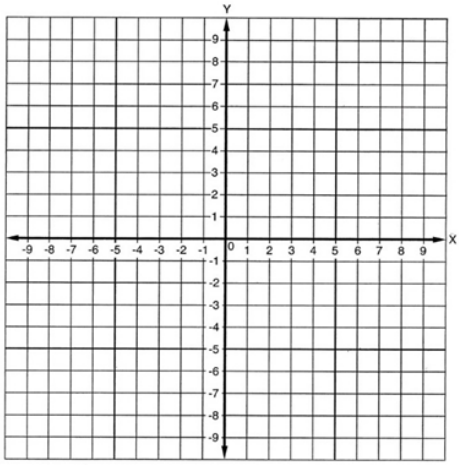
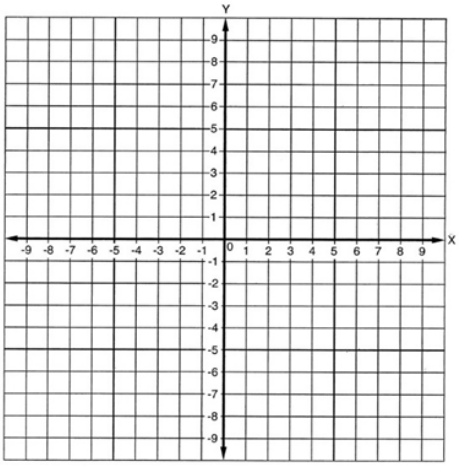
Give all the information about the quadratic equation.



1.) f(x)= $2x^2 + 12x + 17$
   1.)Concave up or down?
   2.) D:
   3.) R:
   4.) AOS:
   5.)Vertex:
   6.) Roots
   7.) Transformations
   8.) ROC + ROC -
   9.) End Behaviors
   10.) Positive: Negative:

2.) g(x)= $-3x^2 + 24x - 40$
   1.)Concave up or down?
   2.) D:
   3.) R:
   4.) AOS:
   5.)Vertex:
   6.) Roots
   7.) Transformations
   8.) ROC + ROC -
   9.) End Behaviors
   10.) Positive: Negative:



3.) How do we find the discriminant?

   a.) What does it mean when the discriminant is positive?

   b.) What does it mean when the discriminant is negative?

   c.) What does it mean when the discriminant is zero?

4.) Simplify the following expressions:
   a.) (4+3i)(5+6i) b.) 3(4+2i)-5(4+6i) c.) $(3 + 5i)^2$

5.) Simplify the following expressions:
   a.) $\frac{4}{2+3i}$ b.) $\frac{-6}{3-5i}$ c.) $\frac{4+2i}{2+7i}$

6.) Simplify the following expressions:

a.) i^{35} b.) i^{310} C.) i^{3500} d.) i^{81}

Answers:

1.)f(x)= $2x^2 + 12x + 17$

1.)Concave up or down? up

2.) D: (-inf, inf)

3.) R: [-1, inf)

4.) AOS: x=- 3

5.)Vertex: (-3, -1)

6.) Roots (-3+/-sqrt(2)/2, 0)

7.) Transformations: vertical stretch 2, left 3, down 1

8.) ROC + (increasing) (-3, inf) ROC - (decreasing) (-inf, 3-3

9.) End Behaviors x-> -inf f(x)-> inf & x-> inf f(x)-> inf

10.) Positive: (-inf, -3-sqrt(2)/2)U(-3+sqrt(2)/2, inf) Negative: (-3-sqrt(2)/2, -3+sqrt(2)/2)

2.) g(x)= $-3x^2 + 24x - 40$

1.)Concave up or down? down

2.) D: (-inf, inf)

3.) R: (-inf, 8]

4.) AOS: x=4

5.)Vertex: (4, 8)

6.) Roots : (4 ± 2√(6)/3, 0)

7.) Transformations: reflection over the x-axis, vertical stretch of 3, right 4, up 8

8.) ROC + (-inf, 4) ROC - (4, inf)

9.) End Behaviors x-> -inf g(x)-> -inf & x-> inf g(x)-> -inf

10.) Positive: (4 - 2√(6)/3, 4 + 2√(6)/3) Negative: (-inf, 4 - 2√(6)/3)U (4+2√(6)/3 inf)

3.) Use the formula $b^2 - 4ac$ a.) If it is positive, then there are two real zeros, b.) if it is negative there are two complex zeros c.) if it is 0, there is 1 real zero.

4.) Simplify the following expressions:

a.) (4+3i)(5+6i) b.) 3(4+2i)-5(4+6i) c.) $(3 + 5i)^2$

2+39i -8-24i -16+30i

5.) Simplify the following expressions:

a.) $\frac{4}{2+3i}$ b.) $\frac{-6}{3-5i}$ c.) $\frac{4+2i}{2+7i}$

$\frac{8-12i}{13}$ $\frac{-9-15i}{17}$ $\frac{22-24i}{53}$

6.) Simplify the following expressions:

a.) i^{35} b.) i^{310} C.) i^{3500} d.) i^{81}

-i -1 1 i