Quadratic Parameters

1. Name and show three forms of quadratic functions:

2. What does each of the following parameters control?
   a. Describe it in words
   b. Draw one or more parabolas and label significant points with these letters.
      a
      c
      h
      p
      q
      v

3. What is the discriminant, and what does it tell you about the graph of a parabola?

4. Express
   a. $c$ in terms of $a$, $p$, and $q$
   b. $p$ in terms of $a$, $b$, and the discriminant
   c. $q$ in terms of $a$, $b$, and the discriminant
   d. $p+q$ in terms of $a$ and $b$
   e. $h$ in terms of $p$ and $q$
   f. $h$ in terms of $a$ and $b$
   g. $pq$ in terms of $a$ and $c$
   h. $v$ in terms of $a$, $b$, $c$
   i. $v$ in terms of the discriminant and $a$

5. How many $x$-intercepts if:
   a. $v = 0$
   b. $v > 0$ and $a > 0$
   c. $v < 0$ and $a > 0$
   d. $v > 0$ and $a < 0$
   e. $v < 0$ and $a < 0$
   f. $a > 0$ and $c < 0$
   g. $a < 0$ and $c > 0$