Completing the Square

1. What number do you need to add to $x^2 + 10x$ to make it a perfect square? How about $x^2 + 14x$? How about $x^2 + 5x$?

2. Repeat the following problem for $x^2 + bx$ and $ax^2 + bx$. In both cases, write them in the form $C(x + h)^2 + k$.

3. Now add/subtract appropriate amounts to express $ax^2 + bx + c$ in the form $a(x + h)^2 + k$.

4. Use the previous to derive the quadratic formula and find the formula for the vertex of a parabola.