Convert the following quadratics from standard form to vertex form, then identify the vertex.

1. $y = x^2 + 6x + 5$

$y = (x^2 + 6x + \underline{9}) + 5 - 9$ (3+3, 3·3)

$y = (x+3)(x+3) - 4$

$y = (x+3)^2 - 4$

Vertex: $(-3, -4)$

2. $f(x) = x^2 - 8x + 11$

$f(x) = (x^2 - 8x + \underline{16}) + 11 - 16$ (−4+−4, −4·−4)

$f(x) = (x-4)(x-4) - 5$

$f(x) = (x-4)^2 - 5$

Vertex: $(4, -5)$

3. $g(x) = x^2 + 26x + 68$

$g(x) = (x^2 + 26x + \underline{169}) + 68 - 169$ (13+13, 13·13)

$g(x) = (x+13)(x+13) - 101$

$g(x) = (x+13)^2 - 101$

Vertex: $(-13, -101)$

4. $y = x^2 - 10x - 7$

$y = (x^2 - 10x + \underline{25}) - 7 - 25$ (−5+−5, −5·−5)

$y = (x-5)(x-5) - 32$

$y = (x-5)^2 - 32$

Vertex: $(5, -32)$

5. $g(x) = x^2 + 14x - 16$

$g(x) = (x^2 + 14x + \underline{49}) - 16 - 49$ (7+7, 7·7)

$g(x) = (x+7)(x+7) - 65$

$g(x) = (x+7)^2 - 65$

Vertex: $(-7, -65)$

6. $y = x^2 - 2x + 5$

$y = (x^2 - 2x + \underline{1}) + 5 - 1$ (−1+−1, −1·−1)

$y = (x-1)(x-1) + 4$

$y = (x-1)^2 + 4$

Vertex: $(1, 4)$