Algebra 2 Name_____ ID: 1

Completing the Square and Vertex Form

Date_____ Period____

Find the value that completes the square and then rewrite as a perfect square.

1) $x^2 - 10x + __$

2) $y^2 - 40y + __$

3) $x^2 - 6x + __$

4) $r^2 - 20r + __$

5) $z^2 + 15z + __$

6) $z^2 + 11z + __$

7) $x^2 + 3x + __$

8) $x^2 - \frac{31}{20}x + __$

Solve each equation by completing the square.

9) $x^2 - 14x - 82 = -10$

10) $n^2 + 18n + 39 = -4$

11) $n^2 - 2n - 77 = -6$

12) $p^2 + 20p - 1 = -2$

13) $2x^2 - 16x - 57 = 9$

14) $10m^2 - 20m - 21 = 9$

15) $8x^2 + 16x - 21 = -8$

16) $9m^2 + 18m - 26 = -10$

17) $v^2 + 7v - 87 = -9$

18) $a^2 + 3a - 57 = 6$

19) $a^2 - 17a - 75 = -5$

20) $n^2 + n - 54 = 6$

21) $6m^2 + 3m - 50 = 8$

22) $5x^2 - 7x - 44 = 8$

23) $10m^2 - 4m - 29 = 3$

24) $3x^2 + 3x - 12 = 6$

Use the information provided to write the vertex form equation of each parabola.

25) $y = 3x^2 + 54x + 247$

26) $y = 3x^2 - 30x + 70$

27) $y = -x^2 + 2x - 9$

28) $y = x^2 - 12x + 37$

29) $y = x^2 + 2x - 4$

30) $y = x^2 - 20x + 92$