SM2 6.1: Completing the Square Part 1

Name_____ ID: 1

Date_____ Period____

Find the value of c that completes the square.

1) $z^2 + 10z + c$ 2) $x^2 - 26x + c$ 3) $n^2 - 36n + c$ 4) $x^2 + 12x + c$ 5) $x^2 - 5x + c$ 6) $x^2 + \dfrac{13}{10}x + c$

25   169   324   36

$\dfrac{25}{4}$

$\dfrac{169}{400}$

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

7) $x^2 - 16x +$ __   8) $m^2 - 2m +$ __   9) $y^2 + 17y +$ __   10) $r^2 + 15r +$ __

64; $(x - 8)^2$ 1; $(m - 1)^2$ $\dfrac{289}{4}$; $\left(y + \dfrac{17}{2}\right)^2$ $\dfrac{225}{4}$; $\left(r + \dfrac{15}{2}\right)^2$

Solve each equation by completing the square.

11) $b^2 + 20b + 84 = 0$ 12) $r^2 - 14r - 72 = 0$ 13) $a^2 - 16a + 100 = 0$ 14) $k^2 + 6k - 1 = -2$

$\{-6, -14\}$ $\{18, -4\}$ $\{8 + 6i, 8 - 6i\}$ $\{-3 + 2\sqrt{2}, -3 - 2\sqrt{2}\}$

15) $x^2 + 16x - 94 = -10$ 16) $k^2 = -12k - 75$ 17) $n^2 + 9n - 52 = 0$

$\{-8 + 2\sqrt{37}, -8 - 2\sqrt{37}\}$ $\{-6 + i\sqrt{39}, -6 - i\sqrt{39}\}$ $\{4, -13\}$

18) $p^2 + 7p + 32 = 0$ 19) $v^2 - 19v + 58 = 7$ 20) $m^2 - 15m - 71 = 5$

$\left\{\dfrac{-7 + i\sqrt{79}}{2}, \dfrac{-7 - i\sqrt{79}}{2}\right\}$ $\left\{\dfrac{19 + \sqrt{157}}{2}, \dfrac{19 - \sqrt{157}}{2}\right\}$ $\{19, -4\}$