

Completing the Square

Find the value of c that completes the square.

$$1) x^2 + 6x + c$$

$$x^2 + 6x + 9$$

$$(x+3)^2$$

$$3) x^2 - 34x + c$$

$$x^2 - 34x + 289$$

$$(x-17)^2$$

$$5) r^2 - 6r + c$$

$$(r-3)^2$$

$$7) x^2 - 38x + c$$

$$x^2 - 38x + 361$$

$$(x-19)^2$$

~~$$9) x^2 - \frac{25}{13}x + c$$~~

$$11) z^2 + \frac{11}{8}z + c$$

$$z^2 + \frac{11}{8}z + \frac{121}{256}$$

$$(z + \frac{11}{16})^2$$

$$\left(\frac{11}{16}\right)^2 = \frac{121}{256}$$

$$13) m^2 + 40m + c$$

$$m^2 + 40m + 400$$

$$(m+20)^2$$

 $\frac{1}{2}$

$$15) x^2 - x + c$$

$$x^2 - x + \frac{1}{4}$$

$$\left(x - \frac{1}{2}\right)^2$$

$$\left(\frac{1}{2}\right)^2 = \frac{1}{4}$$

$$17) a^2 - 8a + c$$

$$2) z^2 - 10z + c$$

$$z^2 - 10z + 25$$

$$(z-5)^2$$

$$4) r^2 + 32r + c$$

$$r^2 + 32r + 256$$

$$(r+16)^2$$

$$6) r^2 + 20r + c$$

$$r^2 + 20r + 100$$

$$(r+10)^2$$

$$8) a^2 + 12a + c$$

$$a^2 + 12a + 36$$

$$(a+6)^2$$

$$\left(\frac{7}{2}\right)^2 = \frac{49}{4}$$

$$10) a^2 - 7a + c$$

$$a^2 - 7a + \frac{49}{4}$$

$$\left(a - \frac{7}{2}\right)^2$$

$$12) m^2 + 3m + c$$

$$m^2 + 3m + \frac{9}{4}$$

$$\left(m + \frac{3}{2}\right)^2$$

$$\left(\frac{3}{2}\right)^2 = \frac{9}{4}$$

$$14) x^2 + 13x + c$$

$$x^2 + 13x + \frac{169}{4}$$

$$\left(x + \frac{13}{2}\right)^2$$

$$\left(\frac{13}{2}\right)^2 = \frac{169}{4}$$

$$16) n^2 - \frac{1}{2}n + c$$

$$n^2 - \frac{1}{2}n + \frac{1}{16}$$

$$\left(n - \frac{1}{4}\right)^2$$

$$\left(\frac{1}{4}\right)^2 = \frac{1}{16}$$

$$18) x^2 + \frac{1}{13}x + c$$