

SOLVING QUADRATIC EQUATIONS BY COMPLETING THE SQUARE 47

Provide a number for the blank that will make each expression a perfect-square trinomial.

1. $x^2 + 6x + \underline{\hspace{2cm}}$

2. $x^2 - 8x + \underline{\hspace{2cm}}$

3. $x^2 - 14x + \underline{\hspace{2cm}}$

4. $x^2 + 18x + \underline{\hspace{2cm}}$

5. $4x^2 + 4x + \underline{\hspace{2cm}}$

6. $9x^2 - 6x + \underline{\hspace{2cm}}$

7. $9x^2 - 30x + \underline{\hspace{2cm}}$

8. $4x^2 - 2x + \underline{\hspace{2cm}}$

Solve each equation by completing the square. Write solutions in simplest form.

9. $y^2 + 6y + 5 = 0$

10. $y^2 - 18y + 80 = 0$

11. $2x^2 + 12x + 5 = 0$

12. $16x^2 - 40x + 20 = 0$

13. $9n^2 - 42n + 9 = 0$

14. $9n^2 + 30n + 15 = 0$

15. $2t^2 + 12t = -15$

16. $4t^2 - 28t = -40$

Arcs of certain bridge support cables are described mathematically as quadratic equations. Emily Roebling (1843-1903) had a significant role in the construction of the Brooklyn Bridge. When her husband, who was chief engineer on the bridge, became ill with the bends, Emily taught herself mathematics and engineering skills needed to build bridges. She assumed her husband's job and supervised work on the bridge.



EMILY
WARREN
ROEBLING