

**PROBLEM SET 5-7**  
(Completing the Square)

**Complete the square.**

- |   |  |   |
|---|--|---|
| 1. $x^2 + 18x + \underline{\hspace{2cm}}$ | 2. $x^2 - x + \underline{\hspace{2cm}}$  | 3. $x^2 - 24x + \underline{\hspace{2cm}}$ |
| 4. $x^2 + 20x + \underline{\hspace{2cm}}$ | 5. $m^2 - 3m + \underline{\hspace{2cm}}$ | 6. $x^2 + 4x + \underline{\hspace{2cm}}$  |

**Solve each quadratic equation by completing the square.**

- |                                   |  |                              |
|-----------------------------------|--|------------------------------|
| 7. $x^2 - 3x = 28$                | 8. $x^2 - 2x = -2$                     | 9. $w^2 - 8w - 9 = 0$        |
| 10. $2p^2 = 6p - 20$              | 11. $3x^2 - 12x + 7 = 0$               | 12. $4c^2 + 10c = -7$        |
| 13. $\frac{1}{3}x^2 + 8x - 3 = 0$ | 14. $x^2 - \frac{1}{2}x = \frac{1}{3}$ | 15. $3x^2 + x = \frac{2}{3}$ |

**Rewrite each equation in  $y = a(x - h)^2 + k$  vertex form.**

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|------------------------------------|-------------------------|--------------------------|
| 16. $y = x^2 + 4x - 7$             | 17. $y = 2x^2 - 8x + 1$ | 18. $y = -4x^2 - 5x + 3$ |
| 19. $y = \frac{1}{2}x^2 - 5x + 12$ |                         |                          |