PROBLEM SET 6-4
(Solving Polynomial Equations)

Solve each equation.

1. $x^3 - 27 = 0$

2. $x^3 + 64 = 0$

3. $x^3 - 125 = 0$

4. $81x^3 - 192 = 0$

5. $8x^3 - 1 = 0$

6. $64x^3 + 8 = 0$

7. $x^4 - 10x^2 + 9 = 0$

8. $x^4 - 8x^2 + 16 = 0$

9. $x^4 - 12x^2 - 64 = 0$

10. $x^4 + 4x^2 - 12 = 0$

11. $x^3 + 3x^2 - 4x - 12 = 0$

12. $4x^3 - 16x^2 + 12x = 0$

Use Descartes's Rule of Signs to determine the possible number of positive and negative real roots of each polynomial equation.

13. $3x^3 + 10x^2 - x - 12 = 0$

14. $x^3 - 12x - 16 = 0$

15. $x^4 + x^3 + x^2 - 9x - 10 = 0$

16. $x^4 - 3x^2 - 4 = 0$

17. $x^5 - 3x^4 + 4x^3 - 8x^2 + 16 = 0$

18. $x^4 - 5x^2 + 4 = 0$