Name _____ Date _____

3.5 Practice A

In Exercises 1–6, solve the equation.

1. $q^3 - q^2 - 30q = 0$

2. $k^3 + 6k^2 + 9k = 0$

3. $3y^4 - 6y^3 = -3y^2$

4. $n^3 + 2n^2 - 9n - 18 = 0$

5. $3p^3 = 21p$

6. $8u^6 = 16u^4$

In Exercises 7–10, find the zeros of the function. Then sketch a graph of the function.

7. $f(x) = x^4 + x^3 - 12x^2$

8. $g(x) = x^4 - 8x^2 + 16$

9. $h(x) = x^5 - 2x^4 - 15x^3$

10. $f(x) = -3x^3 - 15x^2 - 12x$

11. According to the Rational Root Theorem, which is *not* a possible solution of the equation $3x^4 - 6x^3 + 2x + 4 = 0$?

A. 4 **B.** $\frac{1}{3}$ **C.** -3 **D.** $-\frac{2}{3}$

12. Describe and correct the error in listing the possible rational zeros of the function.

✗ $f(x) = x^3 + 3x^2 - 8x - 18$

Possible zeros: $\pm 2, \pm 3, \pm 6, \pm 9$

In Exercises 13 and 14, find all the real solutions of the equation.

13. $x^4 - 8x^2 - 9 = 0$

14. $x^3 + 2x^2 - 5x - 6 = 0$

15. Write a third or fourth degree polynomial function that has zeros at $\pm\frac{3}{2}$. Justify your answer.

16. Determine the value of k for each equation so that the given x-value is a solution.

a. $x^3 + 2x^2 - 9x + k = 0;\ x = 3$

b. $x^3 - 3x^2 + kx - 12 = 0;\ x = -4$