

**Solving Polynomial Equations Homework**

Problems 1 – 10, find the real or imaginary solutions of each equation by factoring.

1. $x^3 + 27 = 0$	2. $6x^2 + 13x = 5$
3. $3x^3 - 24 = 0$	4. $2x^3 + 72 = 0$
5. $x^4 - 5x^2 + 4 = 0$	6. $x^4 - 9x^2 + 14 = 0$
7. $x^4 + 13x^2 + 42 = 0$	8. $x^4 + 2x^2 - 15 = 0$
9. $x^3 + 2x^2 + 9x + 18 = 0$	10. $x^4 + 6x^2 = 27$

Problems 11 – 14, find the real solution of each equation by graphing.

11.  $7x^2 = 56x$

12.  $4x^3 - 24x^2 + 36x = 0$

13.  $6x^3 + 10x^2 + 5x = 0$

14.  $3x^4 = 13x^3 + 10x^2$

Problems 15 – 18, solve each equation.

15.  $x^4 + x = 0$

16.  $x^4 + 12x^2 + 27 = 0$

17.  $x^5 - x^3 - 12x = 0$

18.  $3x^4 + 18 = 21x^2$

Problems 19 – 22, solve.

19. The volume  $V$  of a shipping container is  $240 \text{ ft}^3$ . The width, the length, and the height are  $x$ ,  $(x+2)$ , and  $(x-5)$  respectively. What are the dimensions of the container?

20. The product of three consecutive integers  $(n-1)$ ,  $n$  and  $(n+1)$  is  $-210$ . What are the integers?

21. What is the original length of the edge of a cube if, after a one-inch thick slice is cut from one of the sides the volume that remains is 180 cubic inches?

22. The container shown at right is a cylinder on top of a hemisphere. The container holds  $500 \text{ cm}^3$ . Find the radius of the container, to the nearest hundredth of a centimeter.

