

1. Find the points of intersection for

$$f(x) = -2x - 2 \quad \text{and} \quad g(x) = -2x^3 + x^2 - 3$$



2. A company that makes soup wants to change the size of its cylindrical soup cans. The radius of the new can will be 5 cm less than the height. The container will hold $144\pi \text{ cm}^3$ of soup. What are the dimensions of the new container?

3. From 1990 to 1994, the mail order sales of health products in the USA can be modeled by

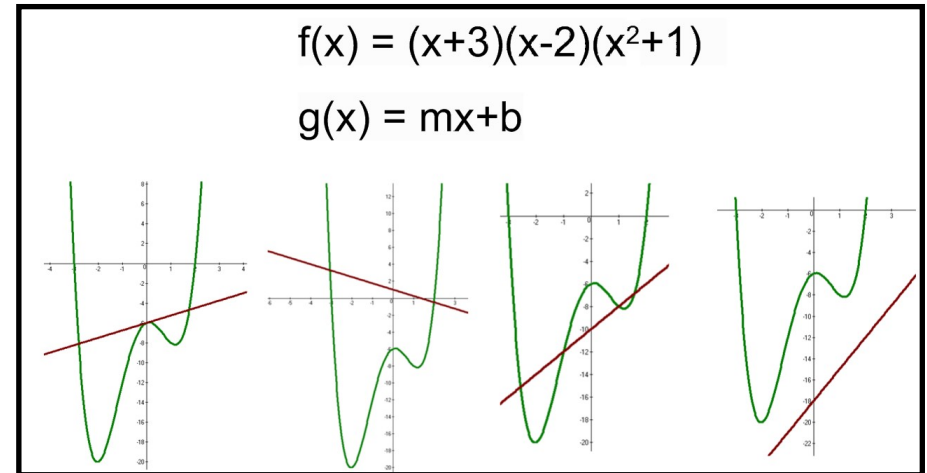
$$S = 10t^3 + 115t^2 + 25t + 2505$$

where S is the sales (in millions of dollars) and t is the # of years since 1990. In what year were about \$3885 million of health products sold?

The solutions to a **system of equations** are any POINTS OF INTERSECTION.

The degree of the functions and the number of their intersections determines the number of solutions.

The highest degree of the polynomial is the _____
 _____ . *Sometimes, there are no solutions.



Set equal to 0 and calculate roots. Don't forget to plug back in for y-values!

Solve the system: $f(x) = x^3 - 2x^2 - 11x + 29$

$$g(x) = 5x - 3$$