

## Mathematical Models

### A Catalog of Essential Functions

#### Essential Functions

- ◆ Linear
- ◆ Polynomial
- ◆ Power
- ◆ Rational
- ◆ Root
- ◆ Algebraic
- ◆ Trigonometric
- ◆ Exponential
- ◆ Logarithmic
- ◆ Transcendental

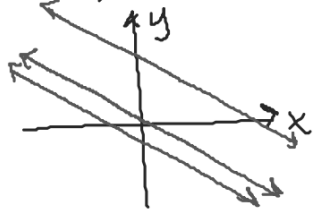
Be able to:

- ◆ Identify a function by its type
- ◆ Find a particular equation given sufficient information

Examples, starting on p. 34:

1. a) root  
b) algebraic  
c) polynomial, 9<sup>th</sup>  
d) rational  
e) trigonometric  
f) logarithmic

7.  $f(x) = c - x \rightarrow$  all have same slope



16.  $(100, 2200)$  and  $(300, 4800)$

$$m = \frac{4800 - 2200}{300 - 100} = 13 \quad \leftarrow \text{Cost, in dollars, per chair}$$

$$y - 2200 = 13(x - 100)$$

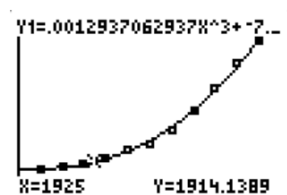
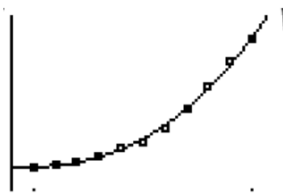
$$c(n) = 13(n - 100) + 2200$$

$$c(0) = 900 \quad \leftarrow \text{overhead costs}$$

25.

CubicReg  
 $y = ax^3 + bx^2 + cx + d$   
 $a = .0012937063$   
 $b = -7.061421911$   
 $c = 12822.97902$   
 $d = -7743770.396$

$$P = 0.0013y^3 - 7.061y^2 + 12823y - 7743770$$



about  
1914 million  
in 1925