

We try to think in terms of families of functions

1. Here, we try to think in terms of families of functions. If we can classify some of them, we can quickly get a handle on problem situations (Like basic functions in College Algebra or Algebra II).
  - a. Give an equation of the family of lines  $f(x)$  with slope  $m = 2$  and sketch a few of them.
  - b. Give an equation of the family of lines  $f(x)$  passing through the point  $(2,1)$  and sketch a few of them.
  - c. There is one line in both of the above families. Give its equation.
2. All members of the family of functions  $f(x) = c - x$ , for some fixed  $c$  have a slope of  $m = \underline{\hspace{2cm}}$ . Sketch a few of them.
3. A cubic function  $f(x) = ax^3 + bx^2 + cx + d$  satisfies  $f(-1) = f(2) = f(0) = 0$  and  $f(1) = 6$ . Determine the coefficients  $a, b, c,$  and  $d$ .
4. Celsius temperature  $C$  and Fahrenheit temperature  $F$  are related by the equation  $F = \frac{9}{5}C + 32$ .
  - a. Sketch  $F$  as a function of  $C$ .
  - b. What is the slope of your graph? Interpret the slope, that is, try to articulate its meaning and significance.
  - c. What is the  $F$ -intercept of your graph? Interpret what this means. Where possible, we like to relate the algebra to the physical situation.