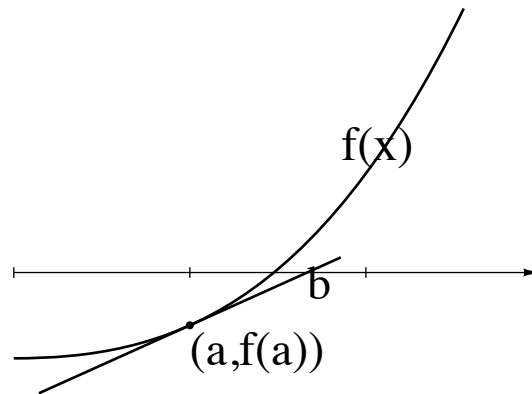


## 1. Fourth root of 19.

- Write an equation for a quartic (equation of the fourth degree) with integer coefficients that has a zero at the fourth root of 19.
- Use your calculator to graph the function using a *Zoom Decimal* window.
- Use the *trace key* to get an approximate value for the root.
- Use the *calc key* to get a better approximation for the zero.
- Why does the TI-84 ask for a guess?

## 2. Tangent Roots

- Find  $t(x)$ , the Taylor form equation of the line tangent to  $f(x)$  at  $(a, f(a))$ .



- Assume that  $b$  is the  $x$ -intercept for  $t(x)$ . Solve for  $b$  in terms of  $a$ ,  $f(a)$ ,  $f'(a)$ .
- Rewrite the final equation ( $b = \dots$ ) in part (b) using  $x_0$  for  $a$  and  $x_1$  for  $b$ .

$$x_1 =$$

3. We want to approximate  $\sqrt[3]{29}$ .

- What is a reasonable guess?
- Without using a calculator, compute a mixed number approximation using a linear approximation technique (*Oyler 65*).
- Using 5 as a seed, demonstrate how to use your calculator (and Newton's Method) to find a good approximation. Record the result of each iteration. How many iterations were required before the TI got to a fixed point?