Linear Approximation

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Linear Approximations

- We want to approximate a function near some starting point (x_0, y_0)
- The simplest approximation is to assume that the function is constant
- The next simplest is that it is linear
- We get the linear form in 2D by looking at the tangent line at a point along a curve

3D Linear Approximations

- moving to two independent variables has the form
  - $f(x_0 + \Delta x, y_0 + \Delta y) \approx f(x_0, y_0) + \frac{\partial f}{\partial x}(x_0, y_0)\Delta x + \frac{\partial f}{\partial x}(x_0, y_0)\Delta y$