

Linearly approximate the following numbers. In each case, determine an appropriate function  $f(x)$  and a point  $(a, f(a))$  where the tangent line meets the graph. Determine if your linear approximation (also known as *local linearization*) overestimates or underestimates the true value.

1.  $\tan 3.1$  (Hint:  $\pi \approx 3.14$ )
2.  $\sqrt[3]{28}$
3.  $\sqrt{9.2}$
4.  $\sin 0.2$
5.  $16.1^{\frac{1}{4}}$