# Math 199 CD2: Linear Approximation

October 5, 2021

1. Approximate the following quantity using Newton's method, a.k.a. linear approximation, explitcitly describe what is $f$ and $a$:

   (a) $\sqrt{16.2}$

   (b) $\sin(0.1)$

   (c) $\sqrt[3]{124}$

   (d) $\sin(\pi/3)$

2. A cubical box is to be built so that it holds 125 cubic inches. How precisely should the edge be made so that the volume will be correct to within 3 cubic inches?

3. A solid steel cylinder has a radius of 2.5 cm and a height of 10 cm. A tight-fitting sleeve is to be made that will extend the radius to 2.6cm. Find the amount of steel needed for the sleeve.