

## 2.9 Videos Guide

### 2.9a

- Linear approximation/linearization of  $f$  at  $a$ 
  - $f(x) \approx L(x) = f(a) + f'(a)(x - a)$

Exercise:

- Find the linearization to  $f(x) = \sqrt{x}$  at  $x = 1$  and use it to approximate  $\sqrt{1.1}$ .

### 2.9b

- Differentials
  - $dy = f'(x)dx$

Exercise:

- Use differentials to estimate the amount of paint needed to apply a coat of paint 0.05 cm thick to a hemispherical dome with diameter 50 m.