# Worksheet 2

MATH2215 March 30, 2020

Name _____

1. If $f(x) = x^2 - 2$, use Newton's method to find $x_3$ with the initial guess of $x_1 = 1$.

2. Let $f(x) = \frac{3}{x^2}$. Find the linear approximation of $f(x)$ at (-1,3).

Newton's Method: $x_{n+1} = x_n - \frac{f(x_n)}{f'(x_{n+1})}$

Linear approximation: $f(x) \approx f(c) + f'(c)(x - c)$

$f(x + \Delta x) \approx f(x) + f'(x)dx$

3. Use Newton's Method to approximate $\sqrt[3]{1.02}$ (complete three iterations). (Hint: First figure out what $f(x)$ should be then figure out an initial guess).

4. Approximate $(1.02)^3$ using differentials.