

Quiz 2 - individual stage

1. Estimate the value of $\sqrt{15}$. Using Newton's method, the best choice will be:

(A) $f(x) = \sqrt{x}$, $x_0 = 16$

(C) $f(x) = \sqrt{x} - 15$, $x_0 = 4$

(B) $f(x) = \sqrt{x + 15}$, $x_0 = 0$

(D) $f(x) = x^2 - 15$, $x_0 = 4$

2. Estimate the value of $\sqrt{15}$. Using linear approximation, the best choice will be:

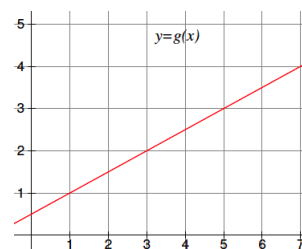
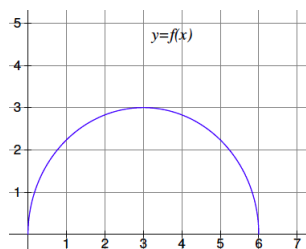
(A) $f(x) = \sqrt{x}$, $x_0 = 16$

(C) $f(x) = \sqrt{x} - 15$, $x_0 = 4$

(B) $f(x) = \sqrt{x + 15}$, $x_0 = 0$

(D) $f(x) = x^2 - 15$, $x_0 = 4$

3. Consider the graphs of f and g below. Let $h(x) = f(x)/g(x)$. What is $h'(3)$?



(A) 0

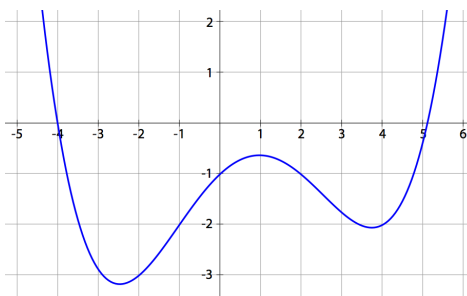
(B) $-3/2$

(C) $-3/4$

(D) $-3/8$

(E) Not enough information

Use the graph of the function $y = h(x)$ below to answer Questions 4-6.



4. Estimate the first iteration of Newton's method, x_1 starting at $x_0 = 3$. Draw any lines that you use on the graph to illustrate your answer.

5. Give an equation of the line you would use to approximate the value of $h(-1.1)$.

6. Give an example of a point (list its coordinates) that, when used as x_0 , will lead to a failure of Newton's method. **Explain why.**

Quiz 2 - group stage

1. Estimate the value of $\sqrt{15}$. Using Newton's method, the best choice will be:

(A) $f(x) = \sqrt{x}$, $x_0 = 16$

(C) $f(x) = \sqrt{x} - 15$, $x_0 = 4$

(B) $f(x) = \sqrt{x + 15}$, $x_0 = 0$

(D) $f(x) = x^2 - 15$, $x_0 = 4$

2. Estimate the value of $\sqrt{15}$. Using linear approximation, the best choice will be:

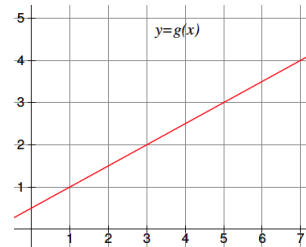
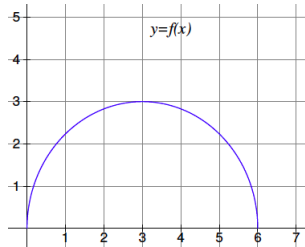
(A) $f(x) = \sqrt{x}$, $x_0 = 16$

(C) $f(x) = \sqrt{x} - 15$, $x_0 = 4$

(B) $f(x) = \sqrt{x + 15}$, $x_0 = 0$

(D) $f(x) = x^2 - 15$, $x_0 = 4$

3. Consider the graphs of f and g below. Let $h(x) = f(x)/g(x)$. What is $h'(3)$?



(A) 0

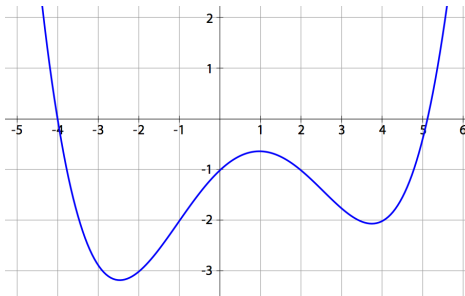
(B) $-3/2$

(C) $-3/4$

(D) $-3/8$

(E) Not enough information

Use the graph of the function $y = h(x)$ below to answer Questions 4-6.



4. Estimate the first iteration of Newton's method, x_1 starting at $x_0 = 3$. Draw any lines that you use on the graph to illustrate your answer.

5. Give an equation of the line you would use to approximate the value of $h(-1.1)$.

6. Give an example of a point (list its coordinates) that, when used as x_0 , will lead to a failure of Newton's method. **Explain why.**