

Iterative Methods, Algebraic Fractions, Proof and Functions/Inverse Functions

Year 11 · Algebra · y11-alg-substitute

Name: _____

Date: _____

Class: _____

Score: ____ / ____

Instructions

Answer every question in Practice. Try the Challenge section once Practice is complete. 10 questions in total.

Practice

1. Using the iteration $x_{n+1} = (x_n + 3)/2$, starting with $x_0 = 1$, find x_1 .

2. Reduce to its simplest form: $x/3 + x/6$. Write as a single fraction.

3. Using the iteration $x_{n+1} = \sqrt{2x_n + 3}$, starting with $x_0 = 1$, find x_1 to 2 decimal places.

4. Write in its simplest form: $(x^2 - 9)/(x - 3)$ by factorising the numerator first.

5. If $f(x) = 2x + 3$, find $f(5)$.

6. Substitute the previous x value into the formula to get the next one. Using $x_{n+1} = (x_n)^2 - 1$, starting with $x_0 = 2$, find x_1 .

7. Find a common denominator before adding fractions. Simplify: $1/x + 1/(2x)$. Write as a single fraction.

8. You can only cancel common factors, not individual terms. Simplify: $(2x + 4)/2$ by factorising the numerator first.

Challenge

1. If $f(x) = 2x + 1$, find the inverse function $f^{-1}(x)$.

2. Simplify: $(x^2 + 5x + 6)/(x + 2)$ by factorising the numerator first.
