

# Iteration 3

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Use App 3 to solve the equation  $x^3 + ax^2 - b = 0$  for various integer values of  $a$  and  $b$ . For question 1 use the 1st iteration formula and  $f(x)$  and for question 2 the 2nd iteration formula and  $h(x)$ .

1. (a) Set  $a = 5$ ,  $b = 1$ ,  $x_0 = 0.5$  and  $t = 8$ . Write down the value of  $x_8$  correct to 3 decimal places.  
  
(b) Set  $a = 2$ ,  $b = -2$ ,  $x_0 = 1$  and  $t = 15$ . Write down the values of  $x_{13}$ ,  $x_{14}$  and  $x_{15}$  correct to 3 decimal places.  
  
(c) Set  $a = 2$ ,  $b = 3$ ,  $x_0 = 3.5$  and  $t = 50$ . Comment on the type of sequence generated, stating clearly whether the function is convergent and if not what type of describe the type of sequence.
2. (a) Set  $a = 2$ ,  $b = -3$ ,  $x_0 = -1$  and  $t = 15$ . Write down the values of  $x_{13}$ ,  $x_{14}$  and  $x_{15}$  correct to 3 decimal places. What value will this sequence converge too?  
  
(b) Set  $a = 4$ ,  $b = 10$ ,  $x_0 = -2$  and  $t = 20$ . Write down the value of  $x_{20}$  correct to 3 decimal places.