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Quiz 3

This quiz is graded out of 10 marks. No books, notes or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

Question 1. pg.698 #16 *(10 marks)* Find the solution of the given equations to at least four decimal places by using Newton's method.

$x^{3/2} = \frac{1}{2x+1}$ $\longleftrightarrow$ $x^{\frac{3}{2}} - \frac{1}{2x+1} = 0$

$f(x) = x^{3/2} - \frac{1}{2x+1}$

$$x_i = x_{i-1} - \frac{f(x_{i-1})}{f'(x_{i-1})}$$

$f'(x) = \frac{3}{2}\sqrt{x} + \frac{2}{(2x+1)^2}$

i	x_i	$f(x_i)$	$f'(x_i)$
0	0.3	-0.4606832328	1.602833836
1	0.5874179609	-0.0095888982	1.572488862
2	0.5935158726	0.0000037838	1.573737897
3	0.5935134683		

∴ an approx to 5 decimal places of the sol. is 0.59351