Answers and mark guide

Q	Answer	Working	Marks
1	**1.8**	Substitute x_0	3
2	**1.889**	Use x_1 to get x_2	3
3	**$x_1 = 3$, $x_2 = 11$**	Substitute twice	3
4	**$x_1 = 2$, $x_2 = 2$**	Substitute twice	3
5	**0.167**	Substitute	3
6	**f(1) < 0 and f(2) > 0**	f(1) = -1, f(2) = 7; a change of sign means a root in between.	4
7	**$x^3 = 4 - x$ so $x = \sqrt[3]{(4 - x)}$**	Move x to the right-hand side	3
8	**1.817, 1.731, 1.740**	Repeat the iteration	4
9	**1.739**	Repeat	4
10	**3.464, 3.530**	Substitute twice	4
11	**3.0000**	Iterate three times	4
12	**3.37**	The values converge to the root	5
13	**Change of sign**	f(3) = -3 and f(4) = 3	4
14	**3.0**	Iterate until the values stabilise	5
15	**Repeated substitution gets closer and closer to the root, giving a numerical approximation**	Convergence	3
16	**$x^3 = 2x + 5$**	Rearrange	3
17	**2.095**	Iterate until the digits stop changing	5
18	**f(2) = −1, f(3) = 16**	Change of sign	4
19	**2.000, 1.333, 1.714**	Repeat three times	4
20	**-1, -1, -1**	Compute each term	5

My score: _____ / 76 Questions 1–15 = 55 marks (Foundation focus)