work throughout to 7 or 8 decimal places. Round up at the end.

$y_2 = 0.5 + 0.1(\sqrt{1} - \sqrt{0.5})$

$= \frac{1}{2} + \frac{1}{10}\left(1 - \frac{1}{\sqrt{2}}\right)$

$= \frac{1}{2} + \frac{\frac{1}{10}(\sqrt{2} - 1)}{\sqrt{2}} = \frac{5\sqrt{2} + \sqrt{2} - 1}{10\sqrt{2}} = \frac{6\sqrt{2} - 1}{10\sqrt{2}} = 0.529289$

ie $y(1.1) = 0.529289$ (using Eulers method, $h = 0.1$)

$y_3 = y_2 + 0.1(\sqrt{x_2} - \sqrt{y_2})$

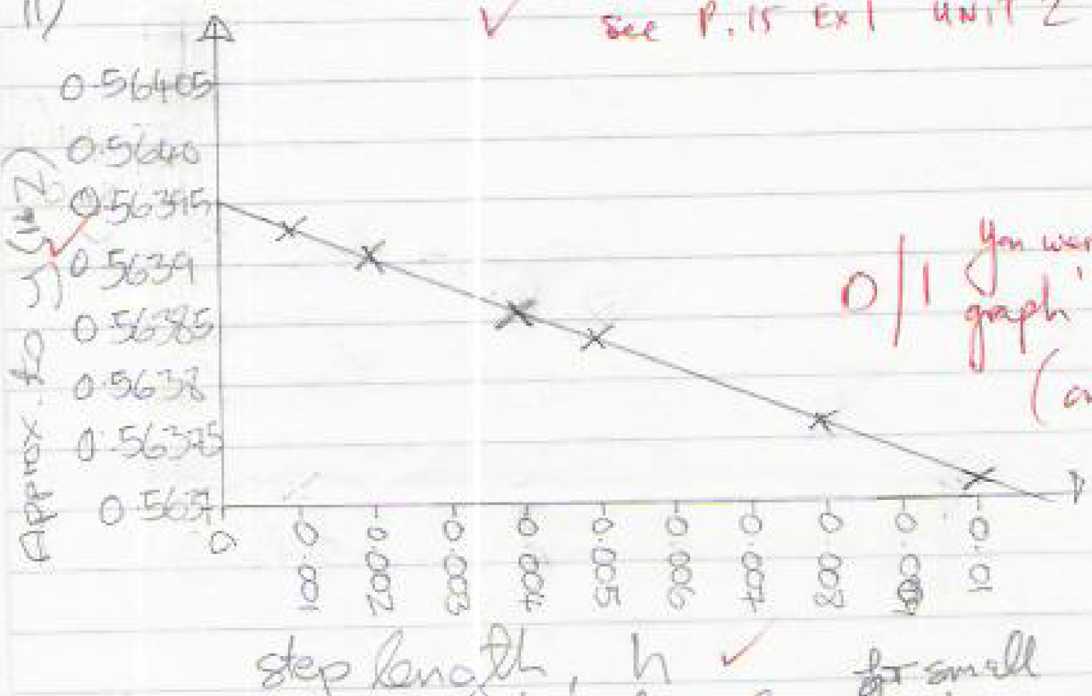
$= 0.529289 + 0.1(\sqrt{1.1} - \sqrt{0.529289})$

$= 0.561418$ ie $y(1.2) = 0.561418$

2/2

ii)

see P.15 Ex 1 UNIT 2 — we usually put in tabular form



0/1 You were not asked for a "sketch graph", rather "plot" a graph (on graph paper!)

Poor accuracy here! (on a result)

From the graph, step length, for small h and the approximation to $y(1.2)$ have a negative linear correlation as step length increases, the approximation to $y(1.2)$ decreases. The true value of $y(1.2)$ can be estimated from the y intercept of the straight line ie $y(1.2) = 0.563956$

Also can be estimated by finding the equation of the line, $y(1.2) = mh + c$, where $m = \frac{n\sum h_i y_i - \sum h_i \sum y_i}{n\sum h_i^2 - (\sum h_i)^2}$, $c = \bar{y}_i - m\bar{h}_i$

This gives the equation $y(1.2) = 0.563956 - 0.24783h$

Putting $h = 0$ gives a value for $y(1.2) = 0.563956$

for this comment, I have not deducted the mark for loss of accuracy using your sketch graph

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