

1 The table below shows corresponding values of  $x$  and  $y$  for  $y = \sqrt{\frac{x}{1+x}}$

The values of  $y$  are given to 4 significant figures.

$x$	0.5	1	1.5	2	2.5
$y$	0.5774	0.7071	0.7746	0.8165	0.8452

(a) Use the trapezium rule, with all the values of  $y$  in the table, to find an estimate for

$$\int_{0.5}^{2.5} \sqrt{\frac{x}{1+x}} dx$$

giving your answer to 3 significant figures.

(3)

(b) Using your answer to part (a), deduce an estimate for  $\int_{0.5}^{2.5} \sqrt{\frac{9x}{1+x}} dx$

(1)

Given that

$$\int_{0.5}^{2.5} \sqrt{\frac{9x}{1+x}} dx = 4.535 \text{ to 4 significant figures}$$

(c) comment on the accuracy of your answer to part (b).

(1)