Question number	Scheme	Marks
5 (a)	$1 + \frac{1}{2}(-x) + \frac{\frac{1}{2}\left(-\frac{1}{2}\right)}{2!}(-x)^2 + \frac{\frac{1}{2}\left(-\frac{1}{2}\right)\left(-\frac{3}{2}\right)}{3!}(-x)^3$	M1
	$1 - \frac{1}{2}x - \frac{1}{8}x^2 - \frac{1}{16}x^3$	A1 A1 (3)
(b)	$x = 0.08$	B1
	$1 - \frac{1}{2}"(0.08)" - \frac{1}{8}"(0.08)"^2 - \frac{1}{16}"(0.08)"^3$	M1
	0.959168 cao	A1 cao (3)
(c)	$(\sqrt{0.92} = \frac{\sqrt{23}}{5} \Rightarrow \sqrt{23} =)"0.959168" \times 5$	M1
	4.79584	A1 (2)
		[8]

Part	Mark	Additional Guidance
(a)	M1	For an attempt at a Binomial expansion. An attempt is defined as the following • The expansion must start with 1 • The powers of their -x must be correct • -x must be used at least once • The denominators 2! And 3! must be seen. Accept 2 and 6 Can be implied by at least 2 correct terms in an expansion
	A1	For at least one term in x correct and fully simplified.
	A1	For the expansion fully correct and simplified. Ignore terms in higher powers of x.
(b)	B1	For finding the value of $x = 0.08$
	M1	For correctly substituting **their** value of x into the expansion **provided** $|x| < 1$ Use of **their expansion** or the correct expansion must be seen explicitly here
	A1	cao
(c)	M1	For use of their value from (b) in $\sqrt{0.92} = \frac{\sqrt{23}}{5} \Rightarrow \sqrt{23} = "0.959168" \times 5$
	A1	Cao
		Allow the final M1 A1 if $\sqrt{0.92} \times 5$ is clearly written and 4.79584 is clearly indicated as the answer.