Question	Scheme	Marks	AOs
8(a)	Because $\frac{2}{\sqrt[3]{2-x}}$ is undefined at $x = 2$ and the limits of the integration are either side of this discontinuity	B1	2.4
		(1)	
(b)	$\int \frac{1}{\sqrt[3]{2-x}}\,dx = -3(2-x)^{\frac{2}{3}}\ (+c)$	M1 A1	2.1 1.1b
	$\int_0^5 \frac{2}{\sqrt[3]{2-x}}\,dx = \int_0^2 \frac{2}{\sqrt[3]{2-x}}\,dx + \int_2^5 \frac{2}{\sqrt[3]{2-x}}\,dx$	M1	3.1a
	$= \lim_{a\to 2^-}\int_0^a \frac{2}{\sqrt[3]{2-x}}\,dx + \lim_{b\to 2^+}\int_b^5 \frac{2}{\sqrt[3]{2-x}}\,dx$ $= \lim_{a\to 2^-}\left[-3(2-x)^{\frac{2}{3}}\right]_0^a + \lim_{b\to 2^+}\left[-3(2-x)^{\frac{2}{3}}\right]_b^5$ $= -3\left(\lim_{a\to 2^-}\left((2-a)^{\frac{2}{3}} - (2-0)^{\frac{2}{3}}\right)\right) + -3\left(\lim_{b\to 2^+}\left((2-5)^{\frac{2}{3}} - (2-b)^{\frac{2}{3}}\right)\right)$	M1	2.1
	$= -3\left(-2^{\frac{2}{3}} + (-3)^{\frac{2}{3}}\right) = -3\left(\sqrt[3]{9} - \sqrt[3]{4}\right)$	A1	2.2a
		(5)	
			(6 marks)

Notes

(a)

B1: A correct explanation why the integral is improper

(b)

M1: Integrates to obtain an expression of the form $k(2-x)^{\frac{2}{3}}$

A1: Correct integration

M1: Adopts the correct strategy of splitting the integral into two with limits 0→2 and 2→5

M1: Produces a rigorous argument that includes an upper limit for the first integral that approaches 2 from below and a lower limit for the second integral that starts from 2 from above

A1: Correct expression (allow exact equivalents)