Question			Answer	Marks	Part Marks and Guidance	
1					Ignore incorrect trials	*Values rot to at least 1 dp* 3.1 17.391 3.2 19.968 3.3 22.737 3.4 25.704 3.5 28.875 3.6 32.256 3.7 35.853 3.8 39.672 3.9 43.719 3.35 24.195375 3.36 24.493056 3.37 24.792753 3.38 25.094472 3.39 25.398219
			Correctly evaluates 3.3 to 3.376 **and** 3.377 to 3.4 inclusive	3	**M1** for Correctly evaluating one value from 3 to 4 <u>inclusive</u> **And M1** for Correctly evaluating one more value between 3 and 4 <u>exclusive</u>	
			Answer 3.4 with justification	1	Final mark dep on **3** marks earned. Calculation to show 3.4 is closer to 25 **or** correctly evaluating a value between 3.35 and 3.39 inclusive	

2			$^{-}0.21$ and $^{-}4.8$	3	**B3** only after using quadratic formula Or **B2** for one value correct or for $^{-}0.20871..$ and $^{-}4.7912..$ rot Or **M1** for $\frac{-5 \pm \sqrt{(5^2 - 4 \times 1 \times 1)}}{2 \times 1}$ or for $(x + 2.5)^2 - 6.25 + 1$ oe	**B2** or **M1** available after using complete the square

3	**(a**		0.5 to 0.6 inclusive $^{-}$3.5 to $^{-}$3.6 inclusive	1 1	Or **SC1** for (0.5 to 0.6, $^{-}$3.5 to $^{-}$3.6) or ($^{-}$3.5 to $^{-}$3.6, 0.5 to 0.6)	Throughout Q17 do not accept (x, y) coordinate point answers
	(b)		Correct graph of $y = x + 2$ 1.2 to 1.3 $^{-}$3.2 to $^{-}$3.3	M1 A1 A1	After **M1**: **SC1** for (1.2 to 1.3, $^{-}$3.2 to $^{-}$3.3) or ($^{-}$3.2 to $^{-}$3.3, 1.2 to 1.3) After **M0**: **SC2** for *their* 2 correct x values ± 0.1 Or **SC1** for *their* 1 correct x value ± 0.1	**FT only** for straight line graph through (0, 2) and with +ve or –ve gradient. Curve may be extended for **FT SC** marks

4			-3.73 and -0.27	3	**B2** for one value correct	
					Or **SC2** for -0.26794919 rot and -3.7320508 rot both seen Or **M1** for $\frac{-4 \pm \sqrt{(4^2 - 4 \times 1 \times 1}}{2 \times 1}$ oe Or for $(x + 2)^2 - 4 + 1$ [=0]	Both rot to at least 1 decimal place

5			$x = 2$ gives $x^3 - x = 6$ $x = 3$ gives $x^3 - x = 24$ 20 lies between 6 and 24 [so solution lies between 2 and 3] oe	1 1 1Dep	Or, for example: 2.8 gives 19.152 2.9 gives 21.489 Dependent on 2 previous marks scored Solution is 2.8[…] or solution is between 2.8 and 2.9	2.1 7.161 2.2 8.448 2.3 9.867 2.4 11.424 2.5 13.125 2.6 14.976 2.7 16.983 2.8 19.152 2.85 20.299 2.9 21.489	All outcomes rot

6	(a)		$(x + 5)(x – 3)$ final answer	**2**	**B1** for $(x \pm 5)(x \pm 3)$ seen	
	(b)		-5, (+)3	**FT1**	FT from *their* 2 brackets only	
	(c)		$\frac{x+5}{x+3}$ final answer	**2**	**B1** for $(x + 3)(x – 3)$ seen	

7	**(a)**		5 and -5	3	**B2** for one of these Or **M1** for $x^2 = 25$ Or **B1** each for embedded answers	
	(b)		$[a =][\pm]\sqrt{\frac{S}{2} - 2bc}$ or $\sqrt{\frac{S - 4bc}{2}}$ oe as final answer	3	nfww **M1** for $2a^2 = S - 4bc$ or for $\frac{S}{2} = 2bc + a^2$ **M1** for $\frac{S}{2} - 2bc = a^2$ or $\frac{S - 4bc}{2} = a^2$ or FT **M1** for $[a =][\pm]\sqrt{\frac{S}{2} - 2bc}$ oe or FT ; award last **M1** at stage of final answer Or **M2** for complete correct inverse flow diagram and **M1** for final answer **SC1** if no working, and final answer appears with just one error	**M1** for each of FT correct, constructive steps leading to answer, eg last **M1** FT *their* a^2 = ... The square root symbol must extend to include at least the start of the second term, if there is one, and below the fraction line For mixture of fractions and decimals or triple decker fractions etc, award **M0** where they first occur (unless they sort them later) then ft

8	**(a)**		1.6 or $\frac{8}{5}$ oe	3	**M1** for $10x - 15$ soi or for $2x - 3 = \frac{1}{5}$ oe **M1** for $10x = 16$ or FT *their* first step **M1** for answer FT *their* $ax = b$, with $a \neq 1$ or 0 and $b \neq 0$	Award **M3** only if answer correct Only FT for last mark if **M1** has been earned already
	(b)		$2a(3a - 5)$ as final answer	2	**M1** for $2a(....)$ or $2(3a^2 - 5a)$ or $a(6a - 10)$	Condone omission of final bracket; accept inclusion of multiplication symbols
	(c)		$^{-}6$	1		

9	**(a)**		± 3	3	Both required **B2** for one solution or for $x = \pm \sqrt{9}$ or for $2x = \pm 6$ Or **B1** for $x^2 = 9$ oe or $x = \sqrt{\frac{36}{4}}$ or for $2x = 6$ OR **SC1** for $3^2 = 9$ or $4 \times 3^2 = 36$ **SC1** for $(^-3)^2 = 9$ or $4 \times (^-3)^2 = 36$	ie **2** marks if one step away from full marks, **1** mark if two steps away
	(b)		$[A =] 6c^2$	2	nfww Accept unsimplified eg **2** for $A = 6 \times c^2$ **M1** for $c^2 = \frac{A}{6}$ or for $A = kc^2$ with $k \neq 6$ or for correct unsimplified expression for A eg $[A =](c\sqrt{6})^2$	Condone *a* instead of *A*

10	**(a**		$(x+3)^2-8$	2	**M1** for $(x+3^2)$ soi	
	(b)		$(x+3^2)$ = 8 x + 3 = [±]$\sqrt{8}$ $^-$0.17 and $^-$5.83	M1FT M1FT B2	FT from *their* $(x+a)^2 \pm b$ ± not necessary for this mark **B1** for one of the values correct or two values correct but not to 2dp	*a* and *b* integers