Answers and mark guide

Q	Answer	Working	Marks
1	**x = 3, y = 17 and x = 5, y = 41**	Set equal: $x^2 - 8x + 15 = 0$, factorise to get x = 3 and 5.	5
2	**x = 3, y = 5 and x = 5, y = 21**	Set equal: $x^2 - 8x + 15 = 0$, factorise to get x = 5 and 3.	5
3	**x = −4, y = 24 and x = −1, y = 0**	Set equal: $x^2 + 5x + 4 = 0$, factorise to get x = −1 and −4.	5
4	**x = 3, y = 20 and x = 4, y = 29**	Set equal: $x^2 - 7x + 12 = 0$, factorise to get x = 4 and 3.	5
5	**x = −3, y = 17 and x = 5, y = 25**	Set equal: $x^2 - 2x - 15 = 0$, factorise to get x = −3 and 5.	5
6	**(−3, 9) and (0, 0)**	$x^2 = (x1 + x2)x - x1x2$	5
7	**$x^2 - 2x + 1 = 0$ gives $(x - 1)^2 = 0$: one solution, so it is a tangent**	One repeated root means the line touches the curve.	5
8	**None**	x^2 cannot be negative	3
9	**x = 1 or x = 5**	Factorise	4
10	**(2, 0) and (4, 12)**	Substitute and factorise	5
11	**(3, 4) and (−4, −3)**	Substitute the line into the circle and solve the quadratic.	6
12	**(6, 8) and (−8, −6)**	Substitute the line into the circle and solve the quadratic.	6
13	**(5, 12) and (−12, −5)**	Substitute the line into the circle and solve the quadratic.	6
14	**(3, 4) and (4, 3)**	Substitute the line into the circle and solve the quadratic.	6
15	**(6, 8) and (8, 6)**	Substitute the line into the circle and solve the quadratic.	6
16	**(−3, 14) and (4, 0)**	Quadratic from equating	6
17	**−1**	$x^2 - 2x - k = 0$ has a repeated root: $4 + 4k = 0$	6
18	**Substituting gives $2x^2 + 16x + 39 = 0$ with discriminant $256 - 312 < 0$, so no real solutions**	$b^2 - 4ac < 0$	6
19	**(3, 4) and (−3, −4)**	$y = 4x/3$; $x^2 + 16x^2/9 = 25$; $x = \pm 3$	6
20	**7.07**	Discriminant = 0 gives $c^2 = 50$	6

My score: _____ / 107 Questions 1–15 = 77 marks (Foundation focus)