

## AQA Further Maths Paper 2024 – Unofficial mark scheme

1. Substituting in:  $t = \pm 11$  [1]
2. Factorising:  $x^2 + y^2 = (x + y)(x - y)$  [2]
3. Limiting Value:  $\frac{3n^2+5}{n^2} = 3$  [1]
4. Differentiation:  $\frac{dy}{dx} = 4x^3 - x^{-2}$  [3]
5. Circle equation:  $x^2 + y^2 = 145$  [3]
6. Matrix:  $x = -2, y = 1$  [3]
7. Functions on graph:  $a = -2, b = 14$  [5]
8. Area with bounds:  $3 < x < 5$  [3]
9. Transformation matrix:  $\begin{bmatrix} 0 & -1 & -1 & 0 \end{bmatrix}$  [2]
10. Transformation matrix  $N^2$ : reflection in  $y = x$  and then  $y = -x$  or rotation  $180^\circ$  about the centre [2]
11. Factorise linear given  $(3x + 7)$ :  $(x + 2)$  and  $(x - 1)$  [4]
12. Polynomial division:  $a = -1.5$  [4]
13. Cosine rule for BC:  $8 \text{ cm}$  [4]
14. 3D trigonometry:  $13 \text{ cm}$  [4]
15. Circle theorem =  $80^\circ$  [3]
16. Line on quadratic:  $y = -0.5x + 3$ , roots are  $-0.7$  and  $4.2$  [4]
17. Complete the square:  $2(x + 4)^2 - 25$  [4]
18. Solve complete the square:  $x = 1 \pm \sqrt{5}$  [4]

19. Stationary points: (0, 5) maximum and (2, 1) minimum [5]

20. Indices equation:  $x = -1$  or  $1.5$  (?) [4]

21. Trig identities: so  $\frac{\tan \tan x}{4}$ ,  $x = 120$  [5]

22. Surds:  $9 + \sqrt{5}$  [5]

23. Algebraic fractions:  $k = -28$  [5]

24. Quadratic sequence:  $x = 6$ ,  $y = 32$  [4]

[80/80]