

PLOTTING QUADRATICS

Answer all of these questions. Remember to show your working out in all questions.

MAIN QUESTIONS

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|-----|----------------------|--|------------------|-----|----------------------|--|-------------------|
| 1. | $x^2 - 9 = 0$ | | $x = -3, x = 3$ | 2. | $x^2 - 5x + 6 = 0$ | | $x = 2, x = 3$ |
| 3. | $x^2 + 7x + 12 = 0$ | | $x = -4, x = -3$ | 4. | $2x^2 - 5x - 3 = 0$ | | $x = -1/2, x = 3$ |
| 5. | $x^2 - 10x + 25 = 0$ | | $x = 5$ | 6. | $3x^2 - 10x + 3 = 0$ | | $x = 1/3, x = 3$ |
| 7. | $x^2 + 4x + 5 = 0$ | | no real roots | 8. | $4x^2 - 12x + 9 = 0$ | | $x = 3/2$ |
| 9. | $x^2 - 3x - 10 = 0$ | | $x = -2, x = 5$ | 10. | $2x^2 + 5x - 12 = 0$ | | $x = -4, x = 3/2$ |
| 11. | x^2 | | (0,0) | 12. | $x^2 - 4$ | | (0,-4) |
| 13. | $x^2 + 6x$ | | (-3,-9) | 14. | $x^2 - 2x + 1$ | | (1,0) |
| 15. | $x^2 + 4x - 5$ | | (-2,-9) | 16. | $2x^2 - 4x + 1$ | | (1,-1) |
| 17. | $-x^2 + 4x$ | | (2,4) | 18. | $3x^2 + 6x - 2$ | | (-1,-5) |
| 19. | $x^2 - 8x + 15$ | | (4,-1) | 20. | $-2x^2 + 12x - 18$ | | (3,0) |
| 21. | $x^2 + 2x + 1$ | | $(x+1)^2$ | 22. | $x^2 - 6x + 9$ | | $(x-3)^2$ |
| 23. | $x^2 + 8x$ | | $(x+4)^2 - 16$ | 24. | $x^2 - 4x + 3$ | | $(x-2)^2 - 1$ |
| 25. | $2x^2 + 8x + 6$ | | $2(x+2)^2 - 2$ | | | | |

MASTER QUESTIONS



- M1.** A ball thrown upwards follows $h = 24t - 5t^2$. Find maximum height in metres. | 28.8 metres
- M2.** A rectangular field has area 80m^2 with length 2m longer than width. Find dimensions. | width 8m, length 10m
- M3.** For $y = x^2 - 8x + 15$, state vertex coordinates and minimum/maximum. | vertex (4,-1), minimum
- M4.** Two positive numbers sum to 13 with product 36. Find the numbers. | 4 and 9
- M5.** Profit is $P = -x^2 + 14x - 24$ (P in £1000s, x in 100s units). Find units to maximise profit. | 700