



Grade 9

Mathematics

Difference of two squares

Question 1: Difference of two squares

1. $1 - 49y^2$
2. $64f^2 - 9$
3. $-4 + 16t^4$
4. $x^2 - 25$
5. $x^6 - 100$
6. $49g^4 - 81$
7. $a^2 - b^2$
8. $36y^8 - 121z^2$
9. $144t^{10} - 16$

$$\begin{array}{lll} \textcircled{1} 1 - 49y^2 & \textcircled{2} 64f^2 - 9 & \textcircled{3} -4 + 16t^4 \\ = (1 + 7y)(1 - 7y) & = (8f + 3)(8f - 3) & = -(4 - 16t^4) \\ & & = -(2 + 4t)(2 - 4t) \\ \\ \textcircled{4} x^2 - 25 & \textcircled{5} x^6 - 100 & \textcircled{6} 49g^4 - 81 \\ = (x + 5)(x - 5) & = (x^3 + 10)(x^3 - 10) & = (7g + 9)(7g - 9) \\ \\ \textcircled{7} a^2 - b^2 & \textcircled{8} 36y^8 - 121z^2 & \textcircled{9} 144t^{10} - 16 \\ = (a + b)(a - b) & = (6y^4 + 11z)(6y^4 - 11z) & = (12t^5 + 4)(12t^5 - 4) \end{array}$$

Question 2: More complicated difference of two squares with factorising

1. $5a^2 - 45$
2. $63y^2 - 7$
3. $(2x - 1)^2 - 49$
4. $3(a + b)^2 - 27$
5. $2p^3q - 8pq^3$
6. $3x^2 - 75y^2$
7. $4c^2d^4 - 36c^4d^2$

$$\begin{array}{lll} \textcircled{1} 5a^2 - 45 & \textcircled{2} 63y^2 - 7 & \textcircled{3} (2x - 1)^2 - 49 \\ = 5(a^2 - 9) & = 7(9y^2 - 1) & = [(2x - 1) + 7][(2x - 1) - 7] \\ = 5(a + 3)(a - 3) & = 7(3y + 1)(3y - 1) & \\ \\ \textcircled{4} 3(a + b)^2 - 27 & \textcircled{5} 2p^3q - 8pq^3 & \\ = 3[(a + b)^2 - 9] & = 2pq(p^2 - 4q^2) & \\ = 3[(a + b) + 3][(a + b) - 3] & = 2pq(p + 2q)(p - 2q) & \\ \\ \textcircled{6} 3x^2 - 75y^2 & \textcircled{7} 4c^2d^4 - 36c^4d^2 & \\ = 3(x^2 - 25y^2) & = 4c^2d^2(d^2 - 9c^2) & \\ = 3(x + 5y)(x - 5y) & = 4c^2d^2(d + 3c)(d - 3c) & \end{array}$$