

Substitution with Negative and Squared Numbers

Substitute the given values into each expression and simplify. Show all your working.

1. If $x = -3$ and $y = 2$, evaluate: $x^2 + y^2$
2. If $a = -4$ and $b = 5$, evaluate: $a^2 - 2b$
3. If $p = -2$, evaluate: $3p^2 + 4p$
4. If $m = 6$ and $n = -2$, evaluate: $m^2 - n^2$
5. If $t = -5$, evaluate: $t^2 - 7t$
6. If $x = -1$ and $y = -3$, evaluate: $2x^2 + y^2$
7. If $a = 0$ and $b = -7$, evaluate: $a^2 + b^2$
8. If $k = -6$ and $l = 2$, evaluate: $k^2 - 3l$
9. If $x = 4$ and $y = -2$, evaluate: $x^2 + 2y$
10. If $n = -8$, evaluate: $n^2 + 5n$
11. If $p = -4$ and $q = 3$, evaluate: $p^2 + q^2 - 2pq$

Maths with Melissa

Answer Key

1. $x^2 + y^2 = (-3)^2 + 2^2 = 9 + 4 = \mathbf{13}$

2. $a^2 - 2b = (-4)^2 - 2 \times 5 = 16 - 10 = 6$

3. $3p^2 + 4p = 3 \times (-2)^2 + 4 \times (-2) = 3 \times 4 - 8 = 12 - 8 = \mathbf{4}$

4. $m^2 - n^2 = 6^2 - (-2)^2 = 36 - 4 = \mathbf{32}$

5. $t^2 - 7t = (-5)^2 - 7 \times (-5) = 25 + 35 = \mathbf{60}$

6. $2x^2 + y^2 = 2 \times (-1)^2 + (-3)^2 = 2 \times 1 + 9 = 2 + 9 = \mathbf{11}$

7. $a^2 + b^2 = 0^2 + (-7)^2 = 0 + 49 = \mathbf{49}$

8. $k^2 - 3l = (-6)^2 - 3 \times 2 = 36 - 6 = \mathbf{30}$

9. $x^2 + 2y = 4^2 + 2 \times (-2) = 16 - 4 = \mathbf{12}$

10. $n^2 + 5n = (-8)^2 + 5 \times (-8) = 64 - 40 = \mathbf{24}$

11. $p^2 + q^2 - 2pq = (-4)^2 + 3^2 - 2 \times (-4) \times 3 = 16 + 9 + 24 = \mathbf{49}$

12. $5x^2 - 4x = 5 \times (-2)^2 - 4 \times (-2) = 5 \times 4 + 8 = 20 + 8 = \mathbf{28}$