Worksheet on Factoring Perfect Square Trinomials

A. Perfect Square Trinomial or Not

Write Yes if the algebraic expression is a perfect square trinomial or No if it is not a perfect square trinomial. One point each.

1. $9x^2 – 36xy + 36y^2$
2. $k^2 – 12km + 36m^2$
3. $4n^2 – 10n + 25$
4. $121a^4 + 66a^2b + 9b^2$
5. $a^2 + 5a + 25$

B. Multiple Choice

Factor the following trinomials completely. Choose the correct answer from the given choices. One point each.

1. $16x^2 − 24xy + 9y^2$
   a) $(8x + 3y)^2$
   b) $(8x – 3y)^2$
   c) $(4x + 3y)^2$
   d) $(4x – 3y)^2$
2. $9x^4 − 24x^2y + 16y^2$
   a) $(3x – 4y^2)^2$
   b) $(3x + 4y^2)^2$
   c) $(3x^2 – 4y)^2$
   d) $(3x^2 + 4y)^2$
3. $4a^2 + 20a + 25$
   a) $(2a + 5)^2$
   b) $(2a - 5)^2$
   c) $(2a^2 + 5)^2$
   d) $(2a^2 - 5)^2$
4. $4m^4n^2 − 12m^2np^3 + 9p^6$
   a) $(2m^2n – 3p^3)^2$
   b) $(2m^2n + 3p^3)^2$
   c) $(2m^4n^2 – 3p^3)^2$
   d) $(2m^4n^2 + 3p^3)^2$
5. $16m^4 + 40m^2n^2 + 25n^4$
   a) $(4m^2 + 5n^2)^2$
   b) $(4m^2 – 5n^2)^2$
   c) $(4m^2 + 5n^4)^2$
   d) $(4m^2 – 5n^4)^2$
6. $36x^2 − 84xy^3 + 49y^6$
   a) $(6x^2 – 7y^3)^2$
   b) $(6x^2 + 7y^3)^2$
   c) $(6x – 7y^3)^2$
   d) $(6x + 7y^3)^2$

7. $121x^4 + 66x^2y + 9y^2$

   a) $(11x^2 + 3y)^2$
   b) $(11x^2 – 3y)^2$
   c) $(11x^4 + 3y)^2$
   d) $(11x^4 – 3y)^2$

8. $49a^2 − 84ab + 36b^2$

   a) $(7a + 6b^2)^2$
   b) $(7a – 6b^2)^2$
   c) $(7a + 6b)^2$
   d) $(7a – 6b)^2$

9. $81m^4n^2 + 36m^2nz^3 + 4z^6$

   a) $(9m^2n – 2z^3)^2$
   b) $(9m^2n + 2z^3)^2$
   c) $(9m^2n – 2z^6)^2$
   d) $(9m^2n + 2z^6)^2$

10. $25m^8 − 30m^4n + 9n^2$

    a) $(5m^8 – 3n)^2$
    b) $(5m^8 + 3n)^2$
    c) $(5m^4 – 3n)^2$
    d) $(5m^4 + 3n)^2$

C. Fill in the blanks

Type the correct answer in the blank. One point each.

1. $a^2 + 6a + 9 = (a$ ___ $3)^2$
2. $25n^2 – 30n + 9 = ($___ $– 3)^2$
3. $100p^2 – 60p + 9 = (10p –$ ___$)^2$
4. $25x^2 + 40x + 16 = (5x$ ___ $4)^2$
5. $4b^2 + 12b + 9 = ($___ $+ 3)^2$
6. $100n^4 – 140n^2 + 49 = (10n^2$ ___ $7)^2$
7. $121m^4 − 44m^2n^2 + 4n^4 = (11m^2 –$ ___$)^2$
8. $4x^4m^2 + 28mx^2y^2 + 49y^4 = ($___ $+ 7y^2)^2$
9. $x^4 − 16x^2y^4 + 64y^8 = (x^2$ ___ $8y^4)^2$
10. $64x^6 + 16x^3y^2 + y^4 = (8x^3 +$ ___$)^2$