Worksheet on Factoring the Difference of Two Squares

A. Perfect Square or Not

Write PS if the algebraic expression is a perfect square or NPS if it is not a perfect square. One point each.

1. $25a^4b^2$
2. $81m^6$
3. $2x^2$
4. $196n^4$
5. $20c^3$

B. Yes or No

Write Yes if the algebraic expression is a difference of two squares or No if it is not a difference of two squares. One point each.

1. $9x^2 – 1$
2. $36k^4 – 4$
3. $4n^2 – 49$
4. $144a^3 – 25b^2$
5. $a^2 – 25b^4$

C. Multiple Choice

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

1. $36x^2 - 64$
   a) $(6x + 8)(6x – 8)$
   b) $(6x – 8)(6x – 8)$
   c) $2(3x + 4)(3x – 4)$
   d) $4(3x + 4)(3x – 4)$
2. $16x^4 - 49y^2z^2$
   a) $(4x^2 + 7y^2z)(4x^2 – 7y^2z)$
   b) $(4x^2 – 7y^2z)(4x^2 – 7y^2z)$
   c) $(4x^2 + 7yz)(4x^2 – 7yz)$
   d) $(4x^2 – 7yz)(4x^2 – 7yz)$
3. $4a^2 - b^6$
   a) $(2a – b^3)(2a – b^3)$
   b) $(2a + b^3)(2a – b^3)$
   c) $(2a – b^4)(2a – b^4)$
   d) $(2a + b^4)(2a – b^4)$
4. $81m^4n^2 - 9z^6$
   a) $(9m^2n + 3z^3)(9m^2n – 3z^3)$
   b) $(9m^2n – 3z^3)(9m^2n – 3z^3)$
   c) $3(3m^2n + z^3)(3m^2n – z^3)$
   d) $9(3m^2n + z^3)(3m^2n – z^3)$
5. $16m^8 - 81b^4$
   a) $(4m^4 – 9b^2)(4m^4 – 9b^2)$
   b) $(4m^4 + 9b^2)(4m^4 – 9b^2)$
   c) $(4m^6 – 9b^2)(4m^6 – 9b^2)$
   d) $(4m^6 + 9b^2)(4m^6 – 9b^2)$

D. Fill in the blanks

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

1. $4a^2 - b^6 = (2a + \_\_\_)(2a – b^3)$
2. $c^4 - 1 = (\_\_\_ + 1)(c + 1)(c – 1)$
3. $144x^6 - 100y^4 = \_\_\_(6x^3 + 5y^2)(6x^3 – 5y^2)$
4. $180m^2 - 5 = \_\_\_(6m + 1)(6m – 1)$
5. $20a^2 - 45 = \_\_\_(2a + 3)(2a – 3)$
6. $36a^4 - 25b^4 = (6a^2 + 5b^2)(\_\_\_ – 5b^2)$
7. $125m^4 - 20n^4 = 5(5m^2 + \_\_\_)(5m^2 – 2n^2)$
8. $4x^4m - 36y^4m = \_\_\_(x^2 + 3y^2)(x^2 – 3y^2)$
9. $2x^4r - 72y^8r = 2r(x^2 + 6y^4)(x^2 – \_\_\_)$
10. $64x^6 - y^4 = (\_\_\_ + y^2)(8x^3 – y^2)$