

Practice Exercises on Factoring the Sum and Difference of Two Cubes

A. Finding the Cube Root

Express the following in exponential form with a power of 3. One point each.

1. 125

4. $216y^3$

2. $\frac{1}{8}$

3. -8

5. $-64x^6y^12$

B. Factoring the Sum and Difference of Two Cubes

Factor each polynomial completely. Write the final answers only. One point each.

1. $x^3 + 125$

6. $27x^3 - 8$

2. $m^3 - 64$

7. $64n^3 + 1$

3. $8x^3 - 27$

8. $343m^3 + 64n^3$

4. $1 - a^3$

9. $a^3 - 343b^3$

5. $n^3 + 27$

10. $16x^4 + 54xy^3$

C. Fill in the Blank

Factor each polynomial completely then supply the missing terms. One point each.

1. $a^3 + 64 = (\underline{\hspace{1cm}} + 4)(a^2 - 4a + 16)$

2. $u^3 + 8 = (u + 2)(\underline{\hspace{1cm}} - 2u + 4)$

3. $125 - x^3 = (5 - x)(25 + \underline{\hspace{1cm}} + x^2)$

4. $a^3 + 125 = (\underline{\hspace{1cm}} + 5)(a^2 - 5a + 25)$

5. $x^3 + 1 = (x + 1)(\underline{\hspace{1cm}} - x + 1)$

6. $-27u^3 + 125 = (-3u + \underline{\hspace{1cm}})(9u^2 + 15u + 25)$

7. $250x^4 + 128x = 2x(\underline{\hspace{1cm}} + 4)(25x^2 - 20x + 16)$

8. $8a^3 + 125 = (2a + 5)(\underline{\hspace{1cm}} - 10a + 25)$

9. $8x^4 + x = x(2x + 1)(\underline{\hspace{1cm}} - 2x + 1)$

10. $m^3 + 8n^3 = (m + \underline{\hspace{1cm}})(m^2 - 2mn + 4n^2)$