

Review Exercise Set 5

Exercise 1: Completely factor the following.

$$x^2 - 16$$

Exercise 2: Completely factor the following.

$$x^2 - (y - 5)^2$$

Exercise 3: Completely factor the following.

$$12x^3 - 27xy^2$$

Exercise 4: Completely factor the following.

$$a^3 - 27$$

Exercise 5: Completely factor the following as the difference of two squares.

$$x^6 - y^6$$

Review Exercise Set 5 Answer Key

Exercise 1: Completely factor the following.

$$\begin{aligned}x^2 - 16 &= x^2 - 4^2 \\x^2 - 16 &= \mathbf{(x - 4)(x + 4)}\end{aligned}$$

Exercise 2: Completely factor the following.

$$\begin{aligned}x^2 - (y - 5)^2 &= [x - (y - 5)][x + (y - 5)] \\x^2 - (y - 5)^2 &= \mathbf{(x - y + 5)(x + y - 5)}\end{aligned}$$

Exercise 3: Completely factor the following.

$$\begin{aligned}12x^3 - 27xy^2 &= 3x(4x^2 - 9y^2) \\12x^3 - 27xy^2 &= 3x[(2x)^2 - (3y)^2] \\12x^3 - 27xy^2 &= \mathbf{3x(2x - 3y)(2x + 3y)}\end{aligned}$$

Exercise 4: Completely factor the following.

$$\begin{aligned}a^3 - 27 &= a^3 - 3^3 \\a^3 - 27 &= (a - 3)(a^2 + 3a + 3^2) \\a^3 - 27 &= \mathbf{(a - 3)(a^2 + 3a + 9)}\end{aligned}$$

Exercise 5: Completely factor the following as the difference of two squares.

$$\begin{aligned}x^6 - y^6 &= (x^3)^2 - (y^3)^2 \\x^6 - y^6 &= (x^3 - y^3)(x^3 + y^3) \\x^6 - y^6 &= (x - y)(x^2 + xy + y^2)(x + y)(x^2 - xy + y^2) \\x^6 - y^6 &= \mathbf{(x - y)(x + y)(x^2 + xy + y^2)(x^2 - xy + y^2)}\end{aligned}$$