

1. Factor the following special polynomials.

a. $36 - 4z^4$

b. $4x^2 - 4xy + y^2$

2. Completely factor the following polynomials using whatever method is necessary.

a. $4 + 4x - x^2 - x^3$

d. $x^2 - x - 56$

b. $6r^3x^2 - 18r^5x^5 + 27r^4x^3$

e. $8y^5 - 80y^4 + 192y^3$

c. $6x^2 - x - 12$

f. $2x^3 + 11x^2 + 12x - 9$

3. Solve the following quadratic equations using the zero-product-principle.

a. $(2x - 5)(3x + 1) = 0$

c. $x^2 = -7x - 10$

b. $3x^2 + 13x - 30 = 0$

d. $x(2x - 9) = -4$

4. Suppose that the sum of two numbers is -3 while their product is -108 . Determine the two numbers.

5. A triangle's base is 7 cm less than twice its height, while its area is 36 cm^2 . Determine the length of the base and the height of the triangle.