

# Factoring Polynomial worksheet

---

**Question 1)**

Factorize following

$$x^2 + 9x + 18$$

$$3x^3 - x^2 - 3x + 1$$

$$x^3 - 23x^2 + 142x - 120$$

$$1 + 8x^3$$

Solution

a)  $(x+6)(x+3)$

b)  $(3x-1)(x-1)(x+1)$

c)  $(x-1)(x-10)(x-12)$

d)  $(2x+1)(4x^2-2x+1)$

**Question 2)**

Factorize Following

(i)  $15x^2 + 5x$

(ii)  $x^2 + 7x + 12$

(iii)  $2x^3 + 2xy^2 + 2xz^2$

(iv)  $25x^2 - (x + 1)^2$

(v)  $x^3 + 8x^2 + 19x + 12$

(vi)  $x(x - 1) + 16(x - 1)$

(vii)  $(x+y)^3 - (x^3 + y^3)$

(viii)  $10xy + 4x + 5y + 2$

(ix)  $6xy - 4y + 6 - 9x$

**Question 3)**

Find the value of  $p$ , if  $x - p$  is a factor of  $x^3 - px^2 + 2x + p - 1$

( $p=1/3$ )

**Question 4)**

Factorize following Cubic Polynomials

a)  $2x^3 - 3x^2 - 17x + 30$

b)  $3y^3 - y^2 - 3y + 1$

c)  $1 - 64a^3 - 12a + 48a^2$

**Question 5)**

If  $x + y + z = 5$  and  $xy + yz + zx = 10$ , then prove that  $x^3 + y^3 + z^3 - 3xyz = -25$ .