

**Factorize the following:**

3.  $x^3 - 2x^2 - 5x + 6$

**Solution:**

$$1 - 2 - 5 + 6 = 0 \Rightarrow (x - 1) \text{ is a factor}$$

$$1 - 5 \neq -2 + 6 \Rightarrow (x + 1) \text{ is not a factor}$$

1	1	-2	-5	6
	0	1	-1	-6
	1	-1	-6	0

$$x^2 - x - 6 = (x - 3)(x + 2)$$

$\therefore$  The factors are  $(x - 1)(x - 3)(x + 2)$

**Factorize the following:**

4.  $2x^4 + 7x^3 + x^2 - 7x - 3$

**Solution:**

$$2 + 7 + 1 - 7 - 3 = 0 \Rightarrow (x - 1) \text{ is a factor}$$

$$2 + 1 - 3 = 7 - 7 = 0 \Rightarrow (x + 1) \text{ is also a factor}$$

1	2	7	1	-7	-3
	0	2	9	10	3
-1	2	9	10	3	0
	0	-2	-7	-3	
	2	7	3		0

$$2x^2 + 7x + 3 = 2x^2 + 6x + x + 3$$

$$= 2x(x + 3) + 1(x + 3)$$

$$= (x + 3)(2x + 1)$$

$\therefore$  The factors are  $(x - 1)(x + 1)(x + 3)(2x + 1)$