Question 1 [12 marks]:

In factorizing quadratic algebraic expressions, the Cross-Multiplication method finds the factors of an expression from the combinations of factors of the first and last terms. What is the problem-solving strategy used in this process of finding? Factorize the following quadratic expressions:

i) $3x^2 + 14x + 8$

$3x$ factorise = 1 x 3

8 factorise = 4 x 2

Cross multiple

1 4

3 2

2 + 12 = 14

$3x^2 + 2x + 12x + 8$

Final answer $(x + 4)(3x + 2)$

ii) $18x^2 - 9x + 1$

$18x$ factorise = 6 x 3

1 factorise = 1 x 1

Cross multiple

6 1

3 1

6 + 3 = 9

$18x^2 - 6x + 3x + 1$

Final answer $(6x - 1)(3x - 1)$

iii) $2x^2 - 13x - 7$

$2x^2 - 14x + x - 7$

$(2x^2 - 14x) + (x - 7)$

$2x(x - 7) + 1(x - 7)$

Final answer $(2x + 1)(x - 7)$

iv) $132x^2 - 73x - 7$

$132x^2 - 84x + 11x - 7$

$(132x^2 - 84x) + (11x - 7)$

$12x(11x - 7) + 1(11x - 7)$

Final answer $(12x + 1)(11x - 7)$