MATH 8A SECTION 32 WINTER 2007

Problem 26, Section P.6

This is the example I began in discussion earlier today (1/10/07) but couldn't finish. Please e-mail me at rock@math.ucr.edu if you have any further questions.

The method used here follows Example 4.

Procedure to factor a polynomial of the form $ax^2 + bx + c$:
1. Find two numbers whose sum is b and whose product is ac.
2. Split b into these two numbers in the expression of the polynomial.
3. Use grouping to factor the resulting polynomial that has four terms.

P. 6, number 26. Factor $3x^2 + 5x - 2$.

We have

$$b = 5, \quad ac = -6.$$

Note:

$$6 + (-1) = 5$$

and

$$(6)(-1) = -6,$$

so 6 and -1 satisfy the first property in the procedure described above. Therefore,

$$\begin{aligned} 3x^2 + 5x - 2 &= 3x^2 + 6x - x - 2 \\ &= 3x(x + 2) - 1(x + 2) \\ &= (3x - 1)(x + 2). \end{aligned}$$

Answer: $(3x - 1)(x + 2)$.