First factor out a -1, rewrite the middle term, group the terms, and factor out the common binomial factor.

$$-1\left(3x^2 - 14x - 5\right) = -1\left(3x^2 + x - 15x - 5\right) = -1\left[\left(3x^2 + x\right) + (-15x - 5)\right]$$

$$= -1[x(3x + 1) - 5(3x + 1)] = -1(3x + 1)(x - 5)$$