4. [6 points] Use the partial fraction decomposition

$$\frac{9x^2 - 37x + 34}{(3 - 2x)(x - 2)^2} = \frac{4}{(x - 2)^2} - \frac{7}{x - 2} - \frac{5}{3 - 2x}$$

to evaluate the following indefinite integral, showing all of your work. You do not need to simplify your answer.

$$\int \frac{9x^2 - 37x + 34}{(3 - 2x)(x - 2)^2}\, dx$$

Solution:　We first use the partial fraction decomposition, and then integrate (e.g. by using substitution in each part).

$$\int \frac{9x^2 - 37x + 34}{(3 - 2x)(x - 2)^2}\, dx = \int \frac{4}{(x - 2)^2}\, dx - \int \frac{7}{x - 2}\, dx - \int \frac{5}{3 - 2x}\, dx$$

$$= -\frac{4}{x - 2} - 7\ln|x - 2| + \frac{5}{2}\ln|3 - 2x| + C$$

Answer: $\qquad \dfrac{-\dfrac{4}{x-2} - 7\ln|x-2| + \dfrac{5}{2}\ln|3-2x| + C}{}$