

# random practice

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## 1 integrate

$$\int \frac{(3 + \ln x)^2(2 - \ln x)}{4x} dx$$

### 1.1 Solution

$$u = 3 + \ln x$$

$$\ln x = u - 3$$

$$du = \frac{1}{x} dx$$

$$\frac{1}{4} \int u^2(5 - u) du$$

$$\frac{1}{4} \int (5u^2 - u^3) du$$

$$\frac{5}{4} \int u^2 du - \frac{1}{4} \int u^3 du$$

$$\frac{5u^3}{12} - \frac{u^4}{16} + c$$

$$\frac{5(3 + \ln x)^3}{12} - \frac{(3 + \ln x)^4}{16} + c$$