

Directions: Show all work on a separate sheet of paper for full credit.

1. Evaluate the integral $\int \sqrt{x} \ln(x) dx$ using the integration by parts with $u = \ln(x)$ and $dv = \sqrt{x} dx$.

2. Evaluate the integral.

(a) $\int t e^{-3t} dt$

(b) $\int (x^2 + 2x) \cos(x) dx$

(c) $\int \cos^{-1}(x) dx$

(d) $\int (\ln(x))^2 dx$

(e) $\int t^4 \ln(t) dt$

(f) $\int_0^{2\pi} t^2 \sin(2t) dt$

(g) $\int_0^1 (x^2 + 1)e^{-x} dx$

3. First make a substitution and then use integration by parts to evaluate.

$$\int e^{\sqrt{x}} dx$$