Each problem is worth 5 points. Show complete justification for full credit.

1. Use a u-substitution to show that $\int \cos 5\theta \, d\theta = \frac{1}{5} \sin 5\theta + C$.

2. Use a u-substitution to show that $\int_{e}^{e^{t}} \frac{dx}{x\sqrt{\ln x}} dx = 2$.