1. Find the indicated definite or indefinite integral.

   (a) $\displaystyle\int 4x^3 \ln 8x \, dx$

   (b) $\displaystyle\int x^2 \sin^6(x^3) \cos(x^3) \, dx$

(c) $\displaystyle\int_0^{2\pi} e^{2x} \cos x \, dx$

2. Use integration by parts to verify the formula

$$\int \arcsin ax \, dx = x \arcsin ax + \frac{1}{a}\sqrt{1 - a^2 x^2} + C$$