

(5)

$$= \frac{1}{4} \int_0^{\sqrt{16}} \ln(4x^2) dx = \frac{1}{32} \int_0^{16} \ln t dt$$

$$= \frac{1}{32} \left[ t \ln t \right]_0^{16} - \frac{1}{32} \int_0^{16} \frac{t}{1+t^2} dt$$

$$= \frac{1}{2} \ln(16) - \frac{1}{64} \left[ \ln(1+t^2) \right]_0^{16}$$

$$= \frac{1}{2} \ln(16) - \frac{1}{64} \ln(257)$$