Evaluate each of the following definite integrals. [You'll get substantial partial credit for integrating correctly; but to get full credit, you must get your answer into the form shown.] Show all work, including any substitutions you make.

1. $\displaystyle\int_0^1 \frac{x^3}{(x^4+1)^3}\,dx$ (Answer: $\dfrac{3}{32}$)

2. $\displaystyle\int_1^e \frac{(\ln y)^4}{y}\,dy$ (Answer: $\dfrac{1}{5}$)

3. $\displaystyle\int_0^{\pi/2} \cos(x)\sin(\pi\sin(x))\,dx$ (Answer: $\dfrac{2}{\pi}$)