Some Practice Problems for the Gateway Exam

Evaluate the following integrals.

1) $\int \cos^4(x)\sin(x)dx$

2) $\int \dfrac{x^2+1}{x^2-x}dx$

3) $\int x^2\sin(2x)dx$

4) $\int_0^{\ln(2)} \dfrac{e^x}{e^x+1}dx$

5) $\int t^3 e^t dt$

6) $\displaystyle\int \frac{2x+3}{x^3+3x}dx$

7) $\displaystyle\int_2^3 \frac{3x^2-1}{(x^3-x)^2}dx$

8) $\displaystyle\int e^{2\theta}\sin(3\theta)d\theta$

9) $\displaystyle\int \frac{x}{\sqrt[4]{x+2}}dx$

10) $\displaystyle\int \frac{5x^2+3x-2}{x^3+2x^2}dx$