A Whole Load of Integration

This is it; where all the integration you've seen comes together. You need to find the following integrals without any clue as to how to do them! You could use 'guess and check', partial fractions, parts, substitution or more than one of the above!

1 $\int \cos(3x-1)dx$

2 $\int e^{1-x}dx$

3 $\int \frac{2x+1}{(x^2+x-1)^2}dx$

4 $\int \cos 2x dx$

5 $\int \ln 2x dx$

6 $\int \frac{x}{(x^2-1)^3}dx$

7 $\int \sqrt{2x-3}dx$

8 $\int \frac{4x-1}{(x-1)^2(x+2)}dx$

9 $\int x^3 \ln x dx$

10 $\int \frac{5}{2x^2-7x+3}dx$

11 $\int (x+1)e^{x^2+2x}dx$

12 $\int \frac{\sin x-\cos x}{\sin x+\cos x}dx$

13 $\int x^2 \sin 2x dx$

14 $\int \sin^3 2x dx$

Now evaluate the following

19 $\int_0^{\frac{\pi}{4}} \sin^3 x dx$

20 $\int_1^2 x^2 \ln x dx$