Math 1510
Practice problems on indefinite integrals

Find the following integrals:

1. $\int \left(\sqrt[3]{x} + x^2 - \dfrac{2}{x} \right) dx$

2. $\int \left(\sin 2x + \sec^2 3x \right) dx$

3. $\int \left(\dfrac{x^2 - x^e + 4}{x} \right) dx$

4. $\int (x-1)^2 (x+1)^2 \, dx$

5. $\int 3^x \cos 3^x \, dx$

6. $\int x^3 (1-x^4)^{2012} \, dx$

7. $\int \sin x \left(\cos^5 x + \sin^2 x \right) dx$

8. $\int \dfrac{1}{x \ln^2 x} \, dx$

9. $\int x\sqrt{5x-2} \, dx$

10. $\int \left(\dfrac{2x + \cos \sqrt{x}}{\sqrt{x}} \right) dx$

11. $\int e^x \cdot (\pi + e^x)^\pi \, dx$

12. $\int \tan x \, dx$

13. $\int \left((2x-1)^{10} + x^2 \sin \left(x^3 + 1 \right) \right) dx$

14. $\int x^3 \cdot \sqrt{x^2 + 4} \, dx$

15. $\int \left(\dfrac{\sin(\ln x) - \ln x}{x} \right) dx$

16. $\int \left(x^2 - x \right) \sqrt{x-1} \, dx$

17. $\int \cos^3 x \, dx$

18. $\int \dfrac{2x}{\sqrt[3]{3x+1}} \, dx$

19. $\int \left(\dfrac{x}{x^2 + 1} - 5^x \right) dx$

20. $\int \sec^3 4x \cdot \tan 4x \, dx$