Log and Exponential Worksheet

Find the derivative of

1. $f(x) = \ln(1 + x^2)$
2. $f(x) = \ln \sqrt{1 + x^2}$
3. $f(x) = \ln(\ln x)$
4. $f(x) = \sqrt{x + 1} - \ln(1 + \sqrt{x + 1})$
5. $f(x) = \ln(x^2 \ln x)$
6. $f(x) = x[\sin(\ln x) - \cos(\ln x)]$
7. $f(x) = e^{\sqrt{x}}$
8. $f(x) = e^{1/x}$
9. $f(x) = e^{e^x}$ which means $e^{(e^x)}$
10. $f(x) = \frac{e^x - e^{-x}}{e^x + e^{-x}}$
11. $f(x) = (\ln x)^x$
12. $f(x) = \ln(e^x + \sqrt{1 + e^{2x}})$

Find the integrals

13. $\int \frac{1}{2x-5} dx$
14. $\int \frac{x^2-4}{x} dx$
15. $\int_2^e \frac{\ln x}{2x} dx$

16. $\int \frac{1}{x^{2/3}(1+x^{1/3})}dx$

17. $\int \frac{\sqrt{x}}{1-x\sqrt{x}}dx$

18. $\int \frac{1}{\sqrt{x+1}}dx$

19. $\int e^{-2x}dx$

20. $\int_1^2 e^{1-x}dx$

21. $\int \frac{e^{-x}}{1+e^{-x}}dx$

22. $\int e^x\sqrt{1-e^x}dx$

23. $\int_1^{\sqrt{2}} x2^{x^2}dx$

24. $\int_1^{e^x} \frac{3^{\ln t}}{t}dt$