Unit 1.2 Supplemented Practice Problems

Evaluate the following integrals.

1) $\int \dfrac{2}{\sqrt{9 - x^2}}\, dx$

2) $\int \dfrac{5}{16 + 25x^2}\, dx$

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

Hint for #3: Use long division first to rewrite the integrand.

4) $\int \dfrac{t}{\sqrt{1 - t^4}}\, dt$

5) $\int \dfrac{e^{3x}}{4 + e^{6x}}\, dx$

6) $\int \dfrac{1}{\sqrt{x}\sqrt{7 - x}}\, dx$

7) $\int \dfrac{x + 5}{\sqrt{9 - (x - 3)^2}}\, dx$

8) $\int \dfrac{w + 5}{w^2 + 5}\, dw$

9) $\int_0^{1/6} \dfrac{1}{\sqrt{1 - 9x^2}}\, dx$

10) $\int_0^{\sqrt{2}/2} \dfrac{\sin^{-1} x}{\sqrt{1 - x^2}}\, dx$

11) $\int_{\pi/2}^{\pi} \dfrac{\sin t}{1 + \cos^2 t}\, dt$

12) $\int_0^2 \dfrac{1}{x^2 - 2x + 2}\, dx$

13) $\int_2^3 \dfrac{2x - 3}{\sqrt{4x - x^2}}\, dx$

Hint for #'s 12 & 13: Start by completing the square.

14) $\int \dfrac{3}{2 + 11x^2}\, dx$

15) $\int \dfrac{8}{\sqrt{6 - 3x^2}}\, dx$

16) $\int \dfrac{17}{x\sqrt{49x^2 - 64}}\, dx$

Also do problems 31 and 47 from Section 5.5 of the book (p. 391).