

1.  $\frac{3}{4}x^4 + x^2 + \pi x + C$

3.  $3\ln|x| + C$

5.  $-3\cos t - 3\arctan t + C$

7.  $\frac{2}{3}\sin w + C$

9.  $\frac{1}{2}e^p + C$

11.  $\sin t + \sec t + C$

14.(a)  $F(x) = -\frac{1}{2}\cos(2x)$

19.(a)  $\int(x + \pi)x^2 dx = \int(x^3 + \pi x^2) dx = \frac{1}{4}x^4 + \frac{\pi}{3}x^3 + C$

(b)  $\int \frac{kx}{\sqrt{x}} dx = \int kx^{1/2} dx = k \frac{2}{3} x^{3/2} + C$

(c)  $\int \frac{3t^2 + t}{6t^3} dt = \int \left( \frac{1}{2} \frac{1}{t} + \frac{1}{6} t^{-2} \right) dt = \frac{1}{2} \ln|t| + \frac{1}{6}(-1)t^{-1} + C = \frac{1}{2} \ln|t| - \frac{1}{6t} + C$

(d)  $\int \left(2 - \frac{1}{x}\right) \sqrt{x} dx = \int \left(2x^{1/2} - x^{-1/2}\right) dx = 2\left(\frac{2}{3}\right)x^{3/2} - (2)x^{1/2} + C = \frac{4}{3}x^{3/2} - 2x^{1/2} + C$

(e)  $\int (x+1)\sqrt{5x} dx = \int \left(\sqrt{5}x^{3/2} + \sqrt{5}x^{1/2}\right) dx = \frac{2\sqrt{5}}{5}x^{5/2} + \frac{2\sqrt{5}}{3}x^{3/2} + C$