

11.  $\int(4+t)dt = \int 4dt + \int t dt = 4t + \frac{t^{1+1}}{1+1} + C$   
 $= 4t + \frac{t^2}{2} + C$
12.  $\int(r^3 + 2r)dr = \int r^3 + 2 \int r dr$   
 $= \frac{r^{3+1}}{3+1} + 2 \cdot \frac{r^{1+1}}{1+1} + C$   
 $= \frac{r^4}{4} + r^2 + C$
13.  $\int(y^5 - 5y)dy = \int y^5 dy - \int 5y dy$   
 $= \frac{y^{5+1}}{5+1} - 5 \cdot \frac{y^{1+1}}{1+1} + C$   
 $= \frac{y^6}{6} - 5 \cdot \frac{y^2}{2} + C = \frac{y^6}{6} - \frac{5y^2}{2} + C$
14.  $\int(5 - 2w - 6w^2)dw$   
 $= \int 5 dw - 2 \int w dw - 6 \int w^2 dw$   
 $= 5w - 2 \cdot \frac{w^2}{2} - 6 \cdot \frac{w^3}{3} + C$   
 $= 5w - w^2 - 2w^3 + C$
15.  $\int(3t^2 - 4t + 5)dt = 3 \int t^2 dt - 4 \int t dt + \int 5 dt$   
 $= 3 \cdot \frac{t^3}{3} - 4 \cdot \frac{t^2}{2} + 5t + C = t^3 - 2t^2 + 5t + C$
16.  $\int(1 + t^2 + t^4 + t^6)dt$   
 $= \int 1 dt + \int t^2 dt + \int t^4 dt + \int t^6 dt$   
 $= t + \frac{t^3}{3} + \frac{t^5}{5} + \frac{t^7}{7} + C$
17. Since  $7 + e$  is a constant,  
 $\int(7 + e)dx = (7 + e)x + C$ .
18.  $\int(5 - 2^{-1})dx = \int\left(5 - \frac{1}{2}\right)dx = \int \frac{9}{2} dx = \frac{9}{2}x + C$

19.  $\int\left(\frac{x}{7} - \frac{3}{4}x^4\right)dx = \frac{1}{7} \int x dx - \frac{3}{4} \int x^4 dx$   
 $= \frac{1}{7} \cdot \frac{x^2}{2} - \frac{3}{4} \cdot \frac{x^5}{5} + C$   
 $= \frac{x^2}{14} - \frac{3x^5}{20} + C$

20.  $\int\left(\frac{2x^2}{7} - \frac{8}{3}x^4\right)dx = \frac{2}{7} \int x^2 dx - \frac{8}{3} \int x^4 dx$   
 $= \frac{2}{7} \cdot \frac{x^3}{3} - \frac{8}{3} \cdot \frac{x^5}{5} + C$   
 $= \frac{2x^3}{21} - \frac{8x^5}{15} + C$

21.  $\int \pi e^x dx = \pi \int e^x dx = \pi e^x + C$

22.  $\int\left(\frac{e^x}{3} + 2x\right)dx = \frac{1}{3} \int e^x dx + 2 \int x dx$   
 $= \frac{1}{3} e^x + 2 \cdot \frac{x^2}{2} + C$   
 $= \frac{e^x}{3} + x^2 + C$

23.  $\int(x^{8.3} - 9x^6 + 3x^{-4} + x^{-3})dx$   
 $= \frac{x^{9.3}}{9.3} - 9 \cdot \frac{x^7}{7} + 3 \cdot \frac{x^{-3}}{-3} + \frac{x^{-2}}{-2} + C$   
 $= \frac{x^{9.3}}{9.3} - \frac{9x^7}{7} - \frac{1}{x^3} - \frac{1}{2x^2} + C$

24.  $\int(0.7y^3 + 10 + 2y^{-3})dy$   
 $= 0.7 \cdot \frac{y^4}{4} + 10y + 2 \cdot \frac{y^{-2}}{-2} + C$   
 $= 0.175y^4 + 10y - \frac{1}{y^2} + C$

25.  $\int \frac{-2\sqrt{x}}{3} dx = -\frac{2}{3} \int x^{\frac{1}{2}} dx = -\frac{2}{3} \cdot \frac{x^{\frac{1}{2}+1}}{\frac{1}{2}+1} + C$   
 $= -\frac{2}{3} \cdot \frac{x^{\frac{3}{2}}}{\frac{3}{2}} + C = -\frac{4x^{\frac{3}{2}}}{9} + C$

26.  $\int dz = \int 1 dz = 1 \cdot z + C = z + C$

27.  $\int \frac{1}{4\sqrt{x^2}} dx = \frac{1}{4} \int x^{-\frac{1}{2}} dx = \frac{1}{4} \cdot \frac{x^{-\frac{1}{2}+1}}{-\frac{1}{2}+1} + C$   
 $= \frac{1}{4} \cdot \frac{x^{\frac{1}{2}}}{\frac{1}{2}} + C = \frac{x^{\frac{1}{2}}}{2} + C$

28.  $\int \frac{-4}{(3x)^3} dx = \int \frac{-4}{27x^3} dx = -\frac{4}{27} \int x^{-3} dx$   
 $= -\frac{4}{27} \cdot \frac{x^{-3+1}}{-3+1} + C$   
 $= -\frac{4}{27} \cdot \frac{x^{-2}}{-2} + C = \frac{2}{27x^2} + C$

29.  $\int\left(\frac{x^3}{3} - \frac{3}{x^3}\right)dx = \frac{1}{3} \int x^3 dx - 3 \int x^{-3} dx$   
 $= \frac{1}{3} \cdot \frac{x^{3+1}}{3+1} - 3 \cdot \frac{x^{-3+1}}{-3+1} + C$   
 $= \frac{1}{3} \cdot \frac{x^4}{4} - 3 \cdot \frac{x^{-2}}{-2} + C = \frac{x^4}{12} + \frac{3}{2x^2} + C$

30.  $\int\left(\frac{1}{2x^3} - \frac{1}{x^4}\right)dx = \frac{1}{2} \int x^{-3} dx - \int x^{-4} dx$   
 $= \frac{1}{2} \cdot \frac{x^{-3}}{-2} - \frac{x^{-3}}{-3} + C$   
 $= -\frac{1}{4x^2} + \frac{1}{3x^3} + C$

31.  $\int\left(\frac{3w^2}{2} - \frac{2}{3w^2}\right)dw = \frac{3}{2} \int w^2 dw - \frac{2}{3} \int w^{-2} dw$   
 $= \frac{3}{2} \cdot \frac{w^3}{3} - \frac{2}{3} \cdot \frac{w^{-1}}{-1} + C = \frac{w^3}{2} + \frac{2}{3w} + C$

32.  $\int \frac{4}{e^{-s}} ds = 4 \int e^s ds = 4e^s + C$

33.  $\int \frac{3u-4}{5} du = \frac{1}{5} \int (3u-4) du = \frac{1}{5} (3 \int u du - 4 \int du)$   
 $= \frac{1}{5} \left(3 \cdot \frac{u^2}{2} - 4u\right) + C = \frac{3}{10} u^2 - \frac{4}{5} u + C$   
 $= \frac{1}{7} (2 \int z dz - \int 5 dz)$   
 $= \frac{1}{7} \left(2 \cdot \frac{z^2}{2} - 5z\right) + C = \frac{1}{7} (z^2 - 5z) + C$

34.  $\int \frac{1}{12} \left(\frac{1}{3} e^x\right) dx = \int \frac{1}{36} e^x dx$   
 $= \frac{1}{36} \int e^x dx = \frac{1}{36} e^x + C$

35.  $\int (u^e + e^u) du = \int u^e du + \int e^u du$   
 $= \frac{u^{e+1}}{e+1} + e^u + C$

36.  $\int (3y^3 - 2y^2 + \frac{e^y}{6}) dy$   
 $= 3 \int y^3 dy - 2 \int y^2 dy + \frac{1}{6} \int e^y dy$   
 $= 3 \cdot \frac{y^4}{4} - 2 \cdot \frac{y^3}{3} + \frac{1}{6} \cdot e^y + C$   
 $= \frac{3y^4}{4} - \frac{2y^3}{3} + \frac{e^y}{6} + C$

37.  $\int (2\sqrt{x} - 3\sqrt[4]{x}) dx = \int (2x^{\frac{1}{2}} - 3x^{\frac{1}{4}}) dx$   
 $= 2 \int x^{\frac{1}{2}} dx - 3 \int x^{\frac{1}{4}} dx$   
 $= 2 \cdot \frac{x^{\frac{1}{2}+1}}{\frac{1}{2}+1} - 3 \cdot \frac{x^{\frac{1}{4}+1}}{\frac{1}{4}+1} + C = \frac{4x^{\frac{3}{2}}}{3} - \frac{12x^{\frac{5}{4}}}{5} + C$

38.  $\int 0 dt = 0 \cdot t + C = C$