

Sec 5.3 day 1 page 362 (1-28 odd)

$$\textcircled{1} \int_{-2}^3 (x^2 - 3) dx = \left. \frac{x^3}{3} - 3x \right]_{-2}^3 = \left( \frac{3^3}{3} - 3(3) \right) - \left( \frac{(-2)^3}{3} - 3(-2) \right)$$
$$= 9 - 9 - \left( \frac{-8}{3} + 6 \right) = \left( -3\frac{1}{3} \right)$$

$$\textcircled{3} \int_0^2 \left( x^4 - \frac{3}{4}x^2 + \frac{2}{3}x - 1 \right) dx = \left. \frac{x^5}{5} - \frac{x^3}{4} + \frac{x^2}{3} - x \right]_0^2$$
$$= \frac{2^5}{5} - \frac{2^3}{4} + \frac{2^2}{3} - 2 - (0) = \frac{32}{5} - 2 + \frac{4}{3} - 2$$
$$= \frac{56}{15} \text{ or } 3\frac{11}{15}$$

$$\textcircled{5} \int_0^1 x^{1/5} dx = \left. \frac{5x^{9/5}}{9} \right]_0^1 = \left( \frac{5}{9} \right)$$

$$\textcircled{7} \int_{-1}^0 (2x - e^x) dx = \left. x^2 - e^x \right]_{-1}^0 = (0^2 - e^0) - ((-1)^2 - e^{-1})$$
$$= -1 - 1 + \frac{1}{e} = -2 + \frac{1}{e} \text{ or } \left( \frac{-2e + 1}{e} \right)$$

$$\textcircled{9} \int_1^2 (1 + 2y)^2 dy = \int_1^2 (1 + 4y + 4y^2) dy$$
$$= \left. y + 2y^2 + \frac{4}{3}y^3 \right]_1^2 = 2 + 2(2)^2 + \frac{4}{3}(2)^3 - \left( 1 + 2 + \frac{4}{3} \right)$$
$$= 2 + 8 + \frac{32}{3} - 3 - \frac{4}{3} = 7 + \frac{28}{3} = \left( \frac{49}{3} \right)$$

$$\begin{aligned} \textcircled{11} \int_1^9 \frac{x-1}{\sqrt{x}} dx &= \int_1^9 (x^{1/2} - x^{-1/2}) dx \\ &= \left[ \frac{2x^{3/2}}{3} - 2x^{1/2} \right]_1^9 = \frac{2}{3} (9)^{3/2} - 2(9)^{1/2} - \left( \frac{2}{3} - 2 \right) \\ &= \frac{2}{3} (27) - 2(3) + 2 - \frac{2}{3} = \boxed{13\frac{1}{3} \text{ or } \frac{40}{3}} \end{aligned}$$

$$\begin{aligned} \textcircled{13} \int_0^1 x(\sqrt[3]{x} + \sqrt[4]{x}) dx &= \int_0^1 (x^{4/3} + x^{5/4}) dx \\ &= \left[ \frac{3x^{7/3}}{7} + \frac{4x^{9/4}}{9} \right]_0^1 = \frac{3}{7} + \frac{4}{9} = \frac{55}{63} \end{aligned}$$

$$\begin{aligned} \textcircled{15} \int_0^{\pi/4} \sec^2 t dt &= \tan t \Big|_0^{\pi/4} = \tan \pi/4 - \tan 0 \\ &= 1 - 0 = \textcircled{1} \end{aligned}$$

$$\begin{aligned} \textcircled{17} \int_1^9 \frac{1}{2x} dx &= \frac{1}{2} \ln x \Big|_1^9 = \frac{1}{2} \ln 9 - \frac{1}{2} \ln 1 \\ &= \ln 9^{1/2} = \textcircled{\ln 3} \end{aligned}$$

$$\begin{aligned} \textcircled{19} \int_{1/2}^{\sqrt{3}/2} \frac{6}{\sqrt{1-t^2}} dt &= 6 \arcsin t \Big|_{1/2}^{\sqrt{3}/2} \\ &= 6 (\arcsin \sqrt{3}/2 - \arcsin 1/2) \\ &= \frac{6\pi}{6} = \textcircled{\pi} \end{aligned}$$

$$\textcircled{21} \int_{-1}^1 e^{u+1} du = e^{u+1} \Big|_{-1}^1 = e^2 - e^0 = \textcircled{e^2 - 1}$$

$$\begin{aligned} \textcircled{23} \int_1^2 \frac{v^3 + 3v^6}{v^4} dv &= \int_1^2 (v^{-1} + 3v^2) dv \\ &= \ln v + v^3 \Big|_1^2 = \ln 2 + 8 - \ln 1 - 1 \\ &= \boxed{\ln 2 + 7} \end{aligned}$$