

Mar 22 33

Practice 9

$$\begin{aligned} 1) \int_1^3 2x^3 - 4x^{-2} dx &= \left. \frac{2x^4}{4} - \frac{x^{-1}}{-1} \right|_1^3 \\ &= \left. \frac{1}{2}x^4 + \frac{1}{x} \right|_1^3 = \left[ \frac{1}{2}3^4 + \frac{1}{3} \right] - \left[ \frac{1}{2}(1)^4 + \frac{1}{1} \right] \\ &= \frac{81}{2} + \frac{1}{3} - \left( \frac{1}{2} + 1 \right) = 34 \end{aligned}$$

$$2) \int_0^b 7e^x dx = 7e^x \Big|_0^b = 7e^b - 7e^0 = 7e^b - 7$$

$$3) \int_1^e 5/x dx = 5 \ln x \Big|_1^e = 5 \ln e - 5 \ln 1 = \underline{\underline{5}}$$

$$4) \int_1^4 (x-1) - (x^2 - 4x + 3) dx = \int_1^4 5x - x^2 - 4 dx$$

$$= \left. \frac{5}{2}x^2 - \frac{x^3}{3} - 4x \right|_1^4 =$$

$$= \left[ \frac{5}{2}(4)^2 - \frac{4^3}{3} - 4(4) \right] - \left[ \frac{5}{2}(1) - \frac{1}{3}(1) - 4(1) \right]$$

$$= \frac{8}{3} - \left( -\frac{11}{6} \right)$$

$$= \frac{16}{6} + \frac{11}{6} = \frac{27}{6} = \left( \frac{9}{2} \right)$$

$$5) \int_{-5}^5 100 - 4x^2 dx = 100x - \frac{4x^3}{3} \Big|_{-5}^5$$

$$= \left[ 100(5) - \frac{4}{3}(5)^3 \right] - \left[ 100(-5) - \frac{4}{3}(-5)^3 \right]$$

$$= 500 - \frac{500}{3} - \left( -500 + \frac{500}{3} \right) = 1000 - \frac{1000}{3}$$

$$= \frac{2000}{3} = \underline{\underline{666.67}}$$

$$6) \int_0^b f(t) dt = \int_0^{10} \frac{1}{t+1} dt = \ln(t+1) \Big|_0^{10}$$

$$= \ln(11) - \ln 1 = \ln 11 = 2.3978$$

$$\times 1000 \text{ \$ per day}$$

$$\underline{\underline{2397.90}}$$

$$7) \int_0^9 3300 dt = 3300t \Big|_0^9 = 3300(9) - 0$$

$$= 29700$$

$$\underline{\underline{29700}}$$