pp. 395-6 #4 $4/3$

#6 $22/15$

#8 ≈ 4.332

#10 $5/6$

#14 $8\frac{1}{6}$ $\left(\frac{49}{6}\right)$

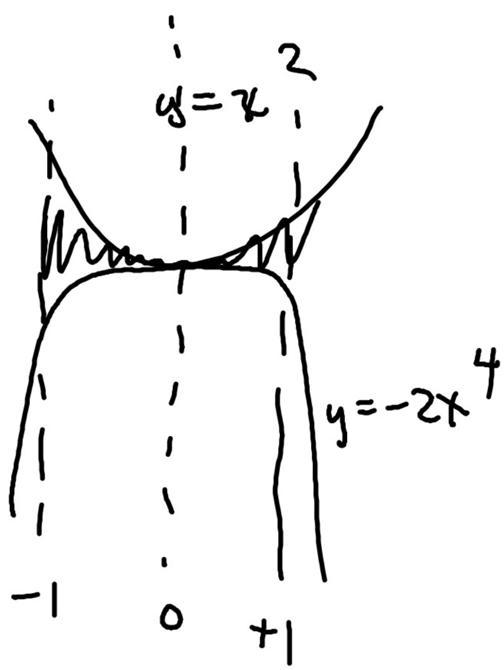
$$2\cdot\left(\frac{x^3}{3}+\frac{2x^5}{5}\right)\Bigg|_0^1$$

#6

$$2\left[\left(\frac{1}{3}+\frac{2}{5}\right)-\left(0-0\right)\right]$$

$$2\left(\frac{5}{15}+\frac{6}{15}\right)$$

$$\frac{22}{15}$$ area



$$2\int_0^1\left(x^2+2x^4\right)dx$$

Test Review:

Need to know:

absolute need-to-know.

if $\frac{dy}{dt} = ky$ (k constant)

then $y = y_0 e^{kt}$

I.C. #1 I.C. #2

Suppose: $y(0) = 320$ $y(\underset{t}{3}) = \underset{y}{240}$

$y = y_0 e^{kt}$

I.C. #1 $320 = y_0 e^{k \cdot 0} \rightarrow 320 = y_0$

$y = 320 e^{kt}$

I.C. #2 $240 = 320 e^{3k}$

$\frac{240}{320} = e^{3k} = \frac{3}{4}$

$\ln e^{3k} = \ln \frac{3}{4}$

$3k = \ln \frac{3}{4}$

$k = \frac{\ln \frac{3}{4}}{3} \approx -.096$

particular solution

$y = 320 e^{-.096t}$

(answer)

Example: $\int (t^3 - 5\sin t)\, dt$

$= \frac{1}{4} t^4 + 5\cos t + C$

Example: $\frac{1}{3} \int 3 \cos 9x \, dx \cdot 3$

u 9x

du 9dx $\frac{1}{3} \sin 9x + C$

Example: $\int \sec^2(2x-3)\,dx$

$u = 2x-3$

$du = 2\,dx$

$$\tfrac{1}{2}\int \sec^2 u\,du$$

$$= \tfrac{1}{2}\tan(2x-3) + C$$

Example: $\int \frac{1}{(9-2x)^3}\,dx$

$u = 9-2x$

$du = -2\,dx$

$$-\frac{1}{2}\int (9-2x)^{-3}(-2)\,dx$$

$$-\frac{1}{2}\cdot\frac{(9-2x)^{-2}}{-2} + C$$

$$\frac{1}{4(9-2x)^2} + C$$

Example: $\int x \cdot \cos(3x^2+2)\ dx$