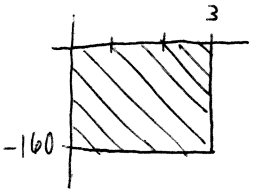
Section 6.2: 1-37 e.o.o., 39, 47-55 odd

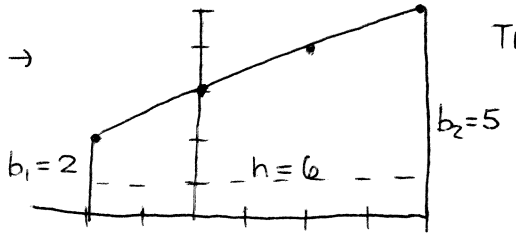
1. $\lim_{n\to\infty} \sum_{k=1}^{n} c_k^2 \Delta x$, $[0,2] \to \int_0^2 x^2\,dx$

5. $\lim_{n\to\infty} \sum_{k=1}^{n} \sqrt{4-c_k^2}\,\Delta x$, $[0,1] \to \int_0^1 \sqrt{4-x^2}\,dx$

9. $\int_0^3 -160\,dt = -160(3-0) = -160(3) = \boxed{-480}$

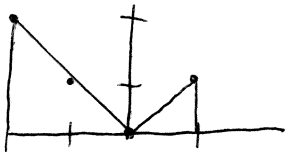


3. $\int_{-2}^{4} \left(\frac{1}{2}x+3\right) dx \to$



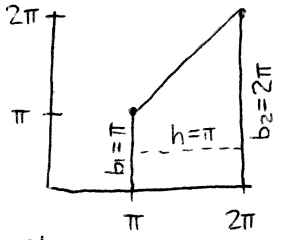
Trapezoid $= \frac{1}{2}h(b_1+b_2)$
$= \frac{1}{2}\cdot 6(2+5) = 3\cdot 7 = \boxed{21}$

17. $\int_{-2}^{1} |x|\,dx \to$



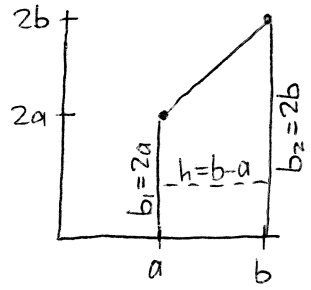
$\Delta_1 = \frac{1}{2}\cdot 2\cdot 2 = 2$
$\Delta_2 = \frac{1}{2}\cdot 1\cdot 1 = \frac{1}{2}$
$\Big\rangle$ Total area $= \boxed{2.5}$

21. $\int_{\pi}^{2\pi} \theta\,d\theta \to$



Trapezoid $= \frac{1}{2}h(b_1+b_2)$
$= \frac{1}{2}\pi(\pi+2\pi) = \frac{\pi}{2}\cdot 3\pi = \boxed{\frac{3\pi^2}{2}}$

25. $\int_a^b 2s\,ds \to$
$0<a<b$

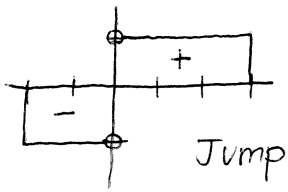


Trapezoid $= \frac{1}{2}h(b_1+b_2)$
$= \frac{1}{2}(b-a)(2a+2b)$
$= (b-a)(a+b)$
$= \cancel{ab}+b^2-a^2-\cancel{ab} = \boxed{b^2-a^2}$

29. $\int_8^{11} 87\,dt = 87(11-8) = 87\cdot 3 = \boxed{261 \text{ mi}}$

33. $\int_0^5 \frac{x}{x^2+4}\,dx \to$ NINT$(X/(x^2+4), x, 0, 5) \approx \boxed{0.991}$

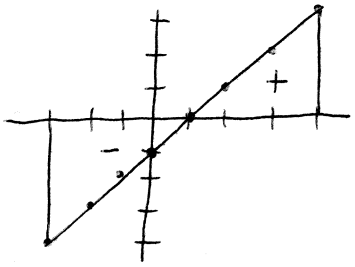
37. $\int_{-2}^{3} \frac{x}{|x|}\,dx$



$-(2\cdot1)+(3\cdot1) = -2+3 = \boxed{1}$

Jump discontinuity at $\boxed{x=0}$

39. $\int_{-3}^{4} \frac{x^2-1}{x+1}\,dx = \int_{-3}^{4} \frac{(x+1)(x-1)}{x+1}\,dx = \int_{-3}^{4} (x-1)\,dx \rightarrow$

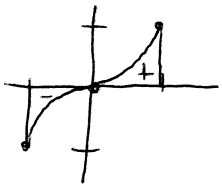


Hole at $\boxed{x=-1}$

$-\frac{1}{2}(4)(4) + \frac{1}{2}(3)(3) = -8 + 4.5 = \boxed{-3.5}$

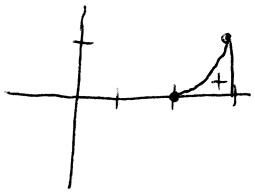
47. $\int_{0}^{1} x^3\,dx = \frac{1}{4}$ (given)

$\int_{-1}^{1} x^3\,dx \rightarrow$



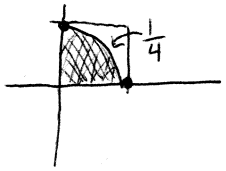
$= -\frac{1}{4} + \frac{1}{4} = \boxed{0}$

49. $\int_{2}^{3} (x-2)^3\,dx \rightarrow$



$= \boxed{\frac{1}{4}}$

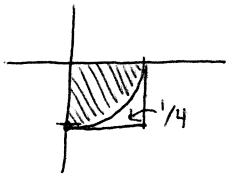
51. $\int_{0}^{1} (1-x^3)\,dx \rightarrow$



$= 1-\frac{1}{4} = \boxed{\frac{3}{4}}$

53. $\int_{0}^{2} \left(\frac{x}{2}\right)^3\,dx =$ horizontal stretch $\times 2 \rightarrow$ double area $\rightarrow \frac{1}{4} \times 2 = \boxed{\frac{1}{2}}$

55. $\int_{0}^{1} (x^3-1)\,dx \rightarrow$



$= -(1-1/4) = \boxed{\frac{-3}{4}}$