p324 # 3-23 odd

Calculus II

evaluate the integral using the FTC I

✓ 5. $\int_3^6 x\,dx \to \frac{x^2}{2}\Big|_3^6 \to \frac{6^2}{2} - \frac{3^2}{2} \to \underline{13.5}$

✓ 7. $\int_{-3}^{2} u^2\,du \to \frac{u^3}{3}\Big|_{-3}^{2} \to \frac{2^3}{3} - \frac{-3^3}{3} \to \underline{11.\overline{6}}$

✓ 9. $\int_3^5 e^x\,dx \to e^x\Big|_3^5 \to \underline{e^5 - e^3}$ ✓

✓ 11. $\int_{-2}^{0} (3x - 2e^x)\,dx \to \frac{3x^2}{2} - 2e^x\Big|_{-2}^{0} \to \left(\frac{3(0)^2}{2} - 2e^0\right) - \left(\frac{3(-2)^2}{2} - 2e^{-2}\right) \to$

$-2 - 6 + 2e^{-2} \to \underline{-8 + 2e^{-2}}$

✓ 13. $\int_1^3 (t^3 - t^2)\,dt \to \frac{t^4}{4} - \frac{t^3}{3}\Big|_1^3 \to \left(\frac{3^4}{4} - \frac{3^3}{3}\right) - \left(\frac{1^4}{4} - \frac{1^3}{3}\right) \to \underline{11.\overline{3}}$ ✓

✓ 15. $\int_{-3}^{4} (x^2 + 2)\,dx \to \frac{x^3}{3} + 2x\Big|_{-3}^{4} \to \left(\frac{4^3}{3} + 2(4)\right) - \left(\frac{-3^3}{3} + 2(-3)\right) \to \underline{44.\overline{3}}$

✓ 17. $\int_{-2}^{2} (10x^9 + 3x^5)\,dx \to \frac{10x^{10}}{10} + \frac{3x^6}{2}\Big|_{-2}^{2} \to \left(2^{10} + \frac{2^6}{2}\right) - \left(-2^{10} + \frac{-2^6}{2}\right) \to$

$1056 - 1024 - 32 \to \underline{0}$ ✓

✓ 19. $\int_3^1 (4t^{3/2} + t^{7/2})\,dt \to \frac{4t^{5/2}}{5/2} + \frac{t^{9/2}}{9/2}\Big|_3^1 \to \frac{8t^{5/2}}{5} + \frac{2t^{9/2}}{9}\Big|_3^1 \to \left(\frac{8(1)^{5/2}}{5} + \frac{2(1)^{9/2}}{9}\right) - \left(\frac{8(3)^{5/2}}{5} + \frac{2(3)^{9/2}}{9}\right)$

$\to \frac{8}{5} + \frac{2}{9} - \frac{124.7}{5} - \frac{280.6}{9} \to -54.3 \to \underline{54.3}$

✓ 21. $\int_1^4 \frac{1}{t^2}\,dt \to \int_1^4 t^{-2}\,dt \to -t^{-1}\Big|_1^4 \to (-4^{-1}) - (-1^{-1}) \to \underline{0.75}$

✓ 23. $\int_1^{27} x^{1/3}\,dx \to \frac{x^{4/3}}{4/3}\Big|_1^{27} \to \frac{3x^{4/3}}{4}\Big|_1^{27} \to \left(\frac{3(27)^{4/3}}{4}\right) - \left(\frac{3(1)^{4/3}}{4}\right) \to \underline{60}$