p 215

5. $\frac{1}{2}f(-1) + \frac{1}{2}f(-.4) + \frac{1}{2}f(.2) + \frac{1}{2}f(1)$

$= \frac{1}{2}(-1 - .064 + .008 + 1) = \frac{1}{2}(-.056) = \boxed{-.028}$

6. $\frac{1}{2}f(-2) + \frac{1}{2}f(-1.5) + .3f(-1) + .3f(-.7) + .4f(-.4)$

$= \frac{1}{2}(2) + \frac{1}{2}(.75) + .3(0) + .3(-.21) + .4(-.24)$

$= 1 + .375 + 0 - .63 - .96 = 1.375 - 1.590$

$= \boxed{-.215}$

8c. S is from -3 to 3 so each rectangle has base 1

Midpoint approx is: $1(f(-2.5) + f(-1.5) + f(-.5) + f(.5) + f(1.5) + f(2.5))$

$= 1(1.510 + -1.1 - 1.75 - 1 + 1.5)$

$= 1(-1.75) = -1.75$

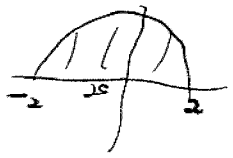
15. $\int_0^{\pi} x \sin x \, dx$

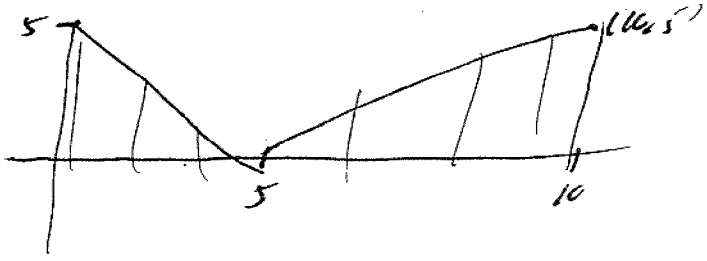
16. $\int_1^5 \frac{x}{1+x} \, dx$

17. $\int_1^2 \sqrt{2x + x^2} \, dx$

18. $\int_0^2 4 - 3x^2 + 6x^5 \, dx$

30. a. 4 b. $\frac{1}{2}\pi \cdot 4 = 2\pi$ c. $4 - 2\pi + \frac{1}{2} = \frac{9}{2} - 2\pi$

32. $\int_{-2}^{2} \sqrt{4-x^2}\,dx$  area 2π

36. 

$\int_0^{10} |x-5|\,dx = \frac{1}{2}\cdot 5\cdot 5 + \frac{1}{2}\cdot 5\cdot 5$

$= 25$

37. $-38/3$

38. 6

39. $\int_{-1}^{5} f(x)\,dx$

40. 8.4

41. $12 = 74 + 48$

p. 225

4. $\int_{-2}^{0} u^5 - u^3 + u^2\,du = \frac{1}{6}u^6 - \frac{u^4}{4} + \frac{u^3}{3}\Big|_{-2}^{0}$

$= 0 - \left(\frac{64}{6} - 4 - \frac{8}{3}\right) = -\frac{32}{3} - \frac{12}{3} - \frac{8}{3} = \boxed{-52/3}$

6. $\int_{1}^{8} x^{1/3}\,dx = \frac{3}{4}x^{4/3}\Big|_{1}^{8} = \frac{3}{4}\cdot 16 - \frac{3}{4}\cdot 1 = \boxed{45/4}$

11. $\int_{-2}^{-1} 4y^3 + 2y^{-3}\,dy = y^4 - y^{-2}\Big|_{-2}^{-1} = |1 - 1| - \left(16 - \frac{1}{4}\right|$

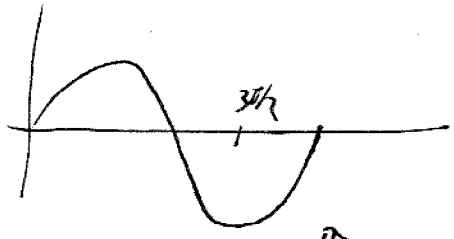
$= \boxed{-15\,3/4}$

17. ~~$\int_{\pi}^{2\pi} \csc^2\theta\,d\theta = -\cot\theta\Big|_{\pi}^{2\pi} = 0 - 0 = 0$~~

$\csc^2\theta = \frac{1}{\sin\theta}$ DNE at $\theta = \pi, 2\pi$

20. $\int_{0}^{9} \sqrt{5}\,t^{1/2} = \frac{2}{3}\sqrt{5}\,t^{3/2}\Big|_{0}^{9} = \frac{2}{3}\sqrt{5}\cdot 27 - 0 = \boxed{\frac{54}{3}\sqrt{5}}$

28.



$\int_{0}^{3\pi/2} |\sin x\,dx| = \int_{0}^{\pi} \sin x\,dx + \int_{\pi}^{3\pi/2} \sin x\,dx$

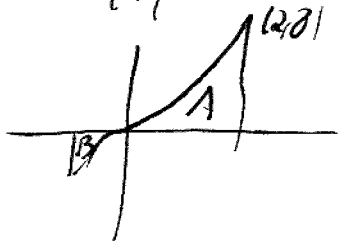
$= -\cos x\Big|_{0}^{\pi} + \cos x\Big|_{\pi}^{3\pi/2}$

$= -(-1 - 1) + (0 - -1)$

$= 2 + 1 = \boxed{3}$

29. $\frac{1}{x^2}$ is not cont on $[-1,3]$

35. $\int_{-1}^{2} x^3\,dx = \frac{x^4}{4}\Big|_{-1}^{2} = \frac{16}{4} - \frac{1}{4} = 15/4$



it is area A − area B

37. $F(x) = \sqrt{x^2+1} + C \quad F'(x) = \frac{x}{\sqrt{x^2+1}}$ so

$$\int \frac{x}{\sqrt{x^2+1}}\,dx = \sqrt{x^2+1} + C$$

38. $F(x) = x\sin x + \cos x + C \quad F'(x) = x\cos x + \sin x - \sin x$

$= x\cos x$

so

$$\int x\cos x\,dx = x\sin x + \cos x + C$$

D.241

1. $\int \cos 3x\, dx = \boxed{\frac{1}{3}\sin(3x) + C}$

2. $\int x(4+x^2)^{10}\, dx \quad u = x^2+4 \quad du = 2x\, dx$

$= \int \frac{1}{2} u^{10}\, du = \frac{1}{22}u^{11} + C = \boxed{\frac{1}{22}(4+x^2)^{11} + C}$

3. $\int x^2\sqrt{x^3+1}\, dx \quad u = x^3+1 \quad du = 3x^2\, dx$

$= \int \frac{1}{3}\sqrt{u}\, du = \frac{2}{9}u^{3/2} + C = \boxed{\frac{2}{9}(x^3+1)^{3/2} + C}$

4. $\int \frac{\sin\sqrt{x}}{\sqrt{x}}\, dx \quad u = \sqrt{x} \quad du = \frac{1}{2\sqrt{x}}\, dx$

$= \int 2\sin u\, du = -2\cos u + C = \boxed{-2\cos(\sqrt{x}) + C}$

5. $\int \frac{4}{(1+2x)^3}\, dx \quad u = 1+2x \quad du = 2\, dx$

$= \int \frac{2}{u^3}\, du = \int 2u^{-3}\, du = -u^{-2} + C = \boxed{\frac{-1}{(1+2x)^2} + C}$

6. $\int \cos^4\theta \sin\theta\, d\theta \quad u = \cos\theta \quad du = -\sin\theta\, d\theta$

$\int -u^4\, du = -\frac{1}{5}u^5 + C = \boxed{-\frac{1}{5}\cos^5\theta + C}$