Eric Nguyen
2019-02-19
Pg. 422 #5-31 odd

5. $y = x^2; \quad [0, 5]$

$$F(x) = \frac{x^3}{3} + C \tag{1}$$
$$= \frac{(5)^3}{3} - \frac{(0)^3}{3} \tag{2}$$
$$= 41\frac{2}{3} \tag{3}$$

7. $y = x^3; \quad [0, 1]$

$$F(x) = \frac{x^4}{4} \tag{4}$$
$$= \frac{(1)^4}{4} - \frac{(0)^4}{4} \tag{5}$$
$$= \frac{1}{4} \tag{6}$$

9. $y = 4 - x^2; \quad [-2, 2]$

$$F(x) = 4x - \frac{x^3}{3} \tag{7}$$
$$= \left(4(2) - \frac{(2)^3}{3}\right) - \left(4(-2) - \frac{(-2)^3}{3}\right) \tag{8}$$
$$= 10\frac{2}{3} \tag{9}$$

11. $y = e^x; \quad [0, 3]$

$$F(x) = e^x \tag{10}$$
$$= e^{(3)} - e^{(0)} \tag{11}$$
$$= e^3 - 1 \tag{12}$$
$$\approx 19.086 \tag{13}$$

13. $y = \frac{3}{x}; \quad [1, 6]$

$$F(x) = 3\ln|x| \tag{14}$$
$$= 3\ln|(6)| - 3\ln|(1)| \tag{15}$$
$$\approx 5.375 \tag{16}$$

15. Total cost, in dollars, for t days

17. Total number of kilowatts used in t hours

19. Total revenue, in dollars, for x number of units produced

21. Total concentration of the drug, in milligrams, for v cubic centimeters of blood

23. Total number of words memorized in t minutes

25. $y = x^3; \quad [0, 2]$

$$F(x) = \frac{x^4}{4} \tag{17}$$
$$= \frac{(2)^4}{4} - \frac{(0)^4}{4} \tag{18}$$
$$= 4 \tag{19}$$

27. $y = x^2 + x + 1; \quad [2, 3]$

$$F(x) = \frac{x^3}{3} + \frac{x^2}{2} + x \tag{20}$$
$$= \frac{(3)^3}{3} + \frac{(3)^2}{2} + (3) - \left(\frac{(2)^3}{3} + \frac{(2)^2}{2} + (2) \right) \tag{21}$$
$$= 9\frac{5}{6} \tag{22}$$

29. $y = 5 - x^2; \quad [-1, 2]$

$$F(x) = 5x - \frac{x^3}{3} \tag{23}$$
$$= 5(2) - \frac{(2)^3}{3} - \left(5(-1) - \frac{(-1)^3}{3} \right) \tag{24}$$
$$= 12 \tag{25}$$

31. $y = e^x; \quad [-1, 5]$

$$F(x) = e^x \tag{26}$$
$$= e^{(5)} - e^{(-1)} \tag{27}$$
$$\approx 148.045 \tag{28}$$