

Answers

- (1)  $\frac{5}{7} \sin x + 2 \ln |x| - \frac{4}{7} \sqrt{x} + \frac{3}{7} e^x + C$ ; (2)  $\frac{24}{11} x^{11/12} - \frac{30}{7} x^{7/6} + \frac{12}{11} x^{11/3} + C$ ; (3)  $\frac{6}{35} x^{7/6} - \frac{1}{16} x^{8/3} + \frac{1}{10} \tan x + C$
- (4)  $8x^2 - \frac{16}{3} x^{9/2} + \frac{9}{7} x^7 + C$ ; (5)  $60 \sqrt{x} + 25x + 9 \ln |x| + C$ ; (6)  $-\frac{5}{27x^{9/5}} + \frac{1}{3} e^x + \frac{2}{3} x^3 + \frac{2}{3} \cot x + C$
- (7)  $\frac{10}{3} x^{9/10} + \frac{9}{11} x^{11/6} - \frac{8}{9} x^{9/2} + C$ ; (8)  $\frac{3}{35} x^{7/2} + \frac{12}{35x^{7/6}} + C$ ; (9)  $\frac{128}{3} x^{3/2} + \frac{128}{13} x^{13/4} + \frac{4}{5} x^5 + C$
- (10)  $\frac{-1}{x^{1/3}} - \frac{3}{2} x^{4/3} + x^3 + C$ ; (11)  $\frac{-1}{(\ln x)^3} + C$ ; (12)  $\frac{4}{3} \ln(4 + e^{3x}) + C$ ; (13)  $4 \ln(x^2 + 4) + C$ ; (14)  $\frac{1}{9} (3x^2 + 6x)^{3/2} + C$
- (15)  $\frac{-2}{(x^2+2)^2} + C$ ; (16)  $\frac{-1}{(\ln x+4)^3} + C$ ; (17)  $-3 \cot(x^3 + 1) + C$ ; (18)  $\frac{1}{2} \ln |5 - 6x + x^2| + C$ ; (19)  $\frac{3}{4} (3 + \ln x)^{4/3} + C$
- (20)  $-\frac{1}{5} (2 - \sin x)^5 + C$ ; (21)  $\frac{1}{2} \ln |1 + 2 \tan x| + C$ ; (22)  $\frac{2}{3} (x^2 + 8x)^{3/4} + C$ ; (23)  $2(x^3 + 1)^{3/2} + C$
- (24)  $\sqrt{e^{2x} + x^2} + C$ ; (25)  $\frac{1}{18} (2 + 3 \ln x)^6 + C$ ; (26)  $\frac{1}{2} \ln |t^2 + 2t + 3| + C$ ; (27)  $f(x) = x^6 + 2x^3 + 5x - 7$
- (28)  $f(x) = 2x^4 - 3x^3 + 19x - 14$ ; (29)  $f(x) = 16x^{5/2} - 8x^3 + 9x - 6$ ; (30)  $f(x) = -2 \sin x + 2x^3 + 7x + 3$
- (31)  $3e^{2x} - 5 \ln |x| + C$ ; (32)  $\frac{-9}{x} + 24 \ln |x| + 16x + C$ ; (33)  $\frac{9}{7} x^{7/3} - \frac{12}{11} x^{11/6} + \frac{9}{2} x^{4/3} + C$
- (34)  $\frac{2}{3} e^{3x} - 6 \ln |x| + \frac{5}{12} x^4 + \frac{1}{2} \sin 2x + C$ ; (35)  $-2e^{-x} + 6 \ln |x| - \frac{5}{x} + C$ ; (36)  $2e^{2x} + \frac{6}{7} x^{7/2} - 12 \sqrt{x} + C$
- (37)  $\frac{-3}{x^{1/3}} + e^{3x} + \frac{5}{x} - 2 \cot 2x + C$ ; (38)  $\frac{4}{5} x^5 + 12x^3 + 81x + C$ ; (39)  $\frac{9}{2} x^2 + \frac{48}{5} x^{5/2} + \frac{16}{3} x^3 + C$
- (40)  $2x^2 - \frac{6}{7} x^{7/3} + \frac{3}{2} x^{10/3} + C$ ; (41)  $-\frac{64}{3} \approx -21.33$ ; (42)  $\frac{87}{2} \approx 43.5$ ; (43)  $-\frac{39}{20} = -1.95$ ; (44)  $-\frac{15}{4} = -3.75$
- (45)  $2e^2 - 2 \approx 12.778$ ; (46)  $\frac{74}{3} \approx 24.667$ ; (47) 13 square units; (48) 20 square units; (49)  $C = \frac{5}{2} x^2 - \ln |x| - 153.50$
- (50)  $C = \ln |x| + x^2 + 7.45$ ; (51)  $\frac{28}{3} \approx 9.33$  square units; (52)  $\frac{5}{2} = 2.5$  square units; (53)  $\frac{27}{4} = 6.75$  square units
- (54)  $\frac{87}{10} = 8.7$  square units; (55)  $\frac{29}{6} \approx 4.83$  square units; (56)  $-\frac{77814}{13} \approx -5985.69$ ; (57)  $2\sqrt{2} - \sqrt{3} \approx 1.09637$
- (58)  $\frac{1}{2} (e^{-1} - 1) \approx -0.316$ ; (59)  $\frac{46}{5} \approx 9.2$ ; (60)  $\frac{1}{3} \ln(14) \approx 0.8797$ ; (61)  $\frac{9}{8} \approx 1.125$ ; (62)  $\frac{7}{3} \approx 2.3$  square units
- (63)  $\frac{34}{3} \approx 11.33$  square units; (64)  $p(90) = 2613$ ; (65)  $P(100) = 11\,950$ ; (66)  $\frac{5}{2} = 2.5$  square units
- (67) 16 square units; (68)  $\frac{37}{12} \approx 3.083$  square units; (69)  $\frac{37}{4} = 9.25$  square units; (70)  $\frac{2}{3} \approx 0.67$  square unit
- (71)  $f(x) = x^3 + x^2 + x + 4$ ; (72)  $y = 4x^3 - 6x^2 + 5$ ; (73)  $y = t - 2\sqrt{t} + 1$ ; (74)  $y = 3 \ln |x| - x - \frac{2}{x} + 3$
- (75)  $f(x) = -\frac{1}{2} x^4 + 3x^3 + 13x - \frac{1}{2}$ ; (76)  $f(x) = -2x^3 + 7x^2 + x - 11$ ; (77)  $y = 24x^2 - 2x^3 - 6$
- (78)  $y = t - 12 \sqrt[3]{t} - 12$ ; (79)  $y = 5 \ln |x| + 3x - \frac{2}{x^2} + 2$ ; (80)  $f(x) = x^4 - x^3 + 15x + 18$
- (81)  $f(x) = 4x^2 - 2e^{2x} - 5 \cos x + 11$ ; (82)  $\frac{1}{2} x^5 + \frac{3}{8} x^4 + \frac{5}{3} x^3 + \frac{3}{2} x^2 + \frac{5}{2} x + \frac{3}{2} \ln |x| + C$
- (83)  $-2x^{-1/2} - \frac{4}{9} e^{3x} - \frac{1}{6} \cos(4x) + C$ ; (84)  $k = \pm 3$ ; (85)  $k = -6$  and  $k = 1$

(86)  $\frac{1}{9} \frac{2^{3x}}{\ln(2)} + 2e^{-2x} + \frac{4}{3} \ln|3x+1| - \frac{2}{3} \tan(3x) + C$ ; (87)  $\frac{5}{2}x^2 - 3x + \frac{1}{2} \ln|4x-3| + C$

(88)  $\frac{1}{2}x^2 + 2 \ln(x^2+1) + C$ ; (89)  $\frac{7}{2} = 3.5$  square units ; (90) 2; (91)  $\frac{1}{3} \sin(2x) - \frac{2}{3}x^2 - \frac{11}{3}x + \ln|x| + C$

(92)  $f(x) = 2e^{3x} + 2 \cos(2x) - 1$ ; (93) 15; (94) 6 square units ; (95)  $\bar{C} = 0.1x^2 + 3x + 100 + \frac{1600}{x}$

(96)  $p = 3x^2 + 0.05x + 500 + \frac{495}{x}$ ; (97)  $C = 4x^3 + 10e^{2x} + 990$ ; (98) \$580 per unit

(99)  $\frac{4}{3} = 1.33$ ; (100)  $\frac{1}{2}(1 - e^{-1}) \approx 0.32$