

1 Class1 - Student 1 - Derivatives and anti-derivatives (Solutions)

$$C - \frac{2}{5\sqrt{t}} \quad (1)$$

$$5 \cdot 2^{2x} \log(2) \quad (2)$$

$$-\frac{k}{2}\pi^{-\frac{kx}{2}} \log(\pi) \quad (3)$$

$$x^2 \quad (4)$$

$$-\frac{4a}{5x^5} \quad (5)$$

$$0 \quad (6)$$

$$\frac{5^{kx}}{k \log(5)} + C \quad (7)$$

$$\frac{6t^2}{b} \quad (8)$$

$$\pi^{kx} k \log(\pi) \quad (9)$$

$$C + 2x^2 \quad (10)$$

$$0 \quad (11)$$

$$-\frac{8}{3}2^{-\frac{2x}{3}} \log(2) \quad (12)$$

$$1 \quad (13)$$

$$\frac{4n}{x}x^n \quad (14)$$

$$-\frac{10}{b}\pi^{-5x} \log(\pi) \quad (15)$$

$$C + \frac{t^2}{b} \quad (16)$$

$$\frac{4 \cdot 3^x}{5 \log(3)} + C \quad (17)$$

$$C - \frac{4^{-2x}a}{4b \log(2)} \quad (18)$$

$$C + \frac{ax^2}{2b} \quad (19)$$

$$\frac{nt^n}{4t} \quad (20)$$

$$2t^3 \quad (21)$$

$$C + 5 \left(\begin{cases} \log(x) & \text{for } n = -1 \\ \frac{x^{n+1}}{n+1} & \text{otherwise} \end{cases} \right) \quad (22)$$

$$C + \frac{ax^2}{2} \quad (23)$$

$$-\frac{12}{b}3^{-4x} \log(3) \quad (24)$$

$$C + \frac{1}{2} \left(\begin{cases} \log(x) & \text{for } n = -1 \\ \frac{x^{n+1}}{n+1} & \text{otherwise} \end{cases} \right) \quad (25)$$

$$\frac{5^{4x}}{4 \log(5)} + C \quad (26)$$

$$\frac{12x^2}{5} \quad (27)$$

$$\frac{3\pi^t}{2 \log(\pi)} + C \quad (28)$$

$$\frac{5^t}{3 \log(5)} + C \quad (29)$$

$$\frac{3k}{2b}4^{\frac{kt}{2}} \log(4) \quad (30)$$

$$\frac{3 \cdot 5^x}{b \log(5)} + C \quad (31)$$

$$\frac{3 \cdot 2^{\frac{2x}{3}}}{4 \log(2)} + C \quad (32)$$

$$\frac{4^x}{4} \log(4) \quad (33)$$

$$C + \frac{3t}{2} \quad (34)$$

$$\frac{8x^3}{5} \quad (35)$$

$$C + \frac{x^3}{3} \quad (36)$$

$$0 \quad (37)$$

$$C + 4x \quad (38)$$

$$\frac{9x^2}{4} \quad (39)$$

$$5 \cdot 5^{5x} \log(5) \quad (40)$$

$$C + \frac{4}{5} \log(t) \quad (41)$$

$$\frac{a}{2} \quad (42)$$

$$\frac{k}{6} 4^{\frac{kx}{3}} \log(4) \quad (43)$$

$$\frac{2}{3bx^{\frac{2}{3}}} \quad (44)$$

$$C + \frac{t^3}{3} \quad (45)$$

$$\frac{4x}{b} \quad (46)$$

$$\frac{25}{2} 5^{5x} \log(5) \quad (47)$$

$$C + 2t \quad (48)$$

$$C + \frac{3}{2} \left(\begin{cases} \log(x) & \text{for } n = -1 \\ \frac{x^{n+1}}{n+1} & \text{otherwise} \end{cases} \right) \quad (49)$$

$$C + 2t \quad (50)$$

$$t^2 \quad (51)$$

$$C - \frac{3^{-2t}}{2 \log(3)} \quad (52)$$

$$6x^2 \quad (53)$$

$$C - \frac{\pi^{-3x}}{15 \log(\pi)} \quad (54)$$

$$0 \quad (55)$$

$$C + \frac{6e^{\frac{t}{3}}}{b} \quad (56)$$

$$4 \cdot 2^{2t} \log(2) \quad (57)$$

$$C + \begin{cases} \log(x) & \text{for } \frac{n}{2} = -1 \\ \frac{x^{\frac{n}{2}+1}}{\frac{n}{2}+1} & \text{otherwise} \end{cases} \quad (58)$$

$$C + \frac{t^2}{2} \quad (59)$$

$$C - \frac{2 \cdot 2^{-5x}}{5 \log(2)} \quad (60)$$

$$C - 2e^{-2t} \quad (61)$$

$$\frac{4^{2x}}{\log(2)} + C \quad (62)$$

$$\frac{ant^n}{3t} \quad (63)$$

$$0 \quad (64)$$

$$C + \log(t) \quad (65)$$

$$\frac{4^{4x}}{10 \log(2)} + C \quad (66)$$

$$\frac{3}{5} 2^x \log(2) \quad (67)$$

$$C + \frac{1}{5} \left(\begin{cases} \log(t) & \text{for } n = -1 \\ \frac{t^{n+1}}{n+1} & \text{otherwise} \end{cases} \right) \quad (68)$$

$$-\frac{3}{t^4} \quad (69)$$

$$4 \cdot 2^{5t} \log(2) \quad (70)$$

$$\frac{3\sqrt{x}}{2} \quad (71)$$

$$C - \frac{4 \cdot 4^{-\frac{kx}{2}}}{k \log(2)} \quad (72)$$

$$\frac{\pi^{3t}}{3 \log(\pi)} + C \quad (73)$$

$$\frac{at}{2} \quad (74)$$

$$C - \frac{2}{3t^3} \quad (75)$$

2 Class1 - Student 2 - Derivatives and anti-derivatives (Solutions)

$$\begin{aligned}
 C - \frac{5 \cdot 2^{-3t}}{6 \log(2)} & \quad (1) & C - \frac{\pi^{-5t}}{5 \log(\pi)} & \quad (21) \\
 C + \begin{cases} \log(t) & \text{for } -n = -1 \\ \frac{t^{-n+1}}{-n+1} & \text{otherwise} \end{cases} & \quad (2) & C + t^3 & \quad (22) \\
 \frac{3^{5t}a}{5 \log(3)} + C & \quad (3) & 0 & \quad (23) \\
 C + \frac{8x^{\frac{5}{2}}}{5} & \quad (4) & 3 \cdot 2^{5t} \log(2) & \quad (24) \\
 \frac{\pi^{5t}}{10 \log(\pi)} + C & \quad (5) & 0 & \quad (25) \\
 4x^3 & \quad (6) & C - \frac{5^{-x}a}{2 \log(5)} & \quad (26) \\
 C - \frac{3 \cdot 2^{-\frac{t}{2}}}{2 \log(2)} & \quad (7) & C + \frac{2x^5}{25} & \quad (27) \\
 20 \cdot 2^{5x} \log(2) & \quad (8) & -\frac{3}{t^4} & \quad (28) \\
 2 \cdot 5^{2x} \log(5) & \quad (9) & C + \frac{e^t}{2} & \quad (29) \\
 C - \frac{2^{-4x}}{4 \log(2)} & \quad (10) & \frac{1}{5} & \quad (30) \\
 C - \frac{3 \cdot 2^{-\frac{t}{3}}}{\log(2)} & \quad (11) & C - \frac{2^{-2t}}{2b \log(2)} & \quad (31) \\
 \frac{2a}{9} \pi^{\frac{2t}{3}} \log(\pi) & \quad (12) & 0 & \quad (32) \\
 2ke^{kt} & \quad (13) & \frac{3^t}{2} \log(3) & \quad (33) \\
 \frac{2n}{t} t^n & \quad (14) & C + \frac{4x^3}{3b} & \quad (34) \\
 \frac{\pi^{5x}a}{10 \log(\pi)} + C & \quad (15) & \frac{k}{6} 3^{\frac{kt}{3}} \log(3) & \quad (35) \\
 -\frac{2}{bt^3} & \quad (16) & C - \frac{2 \cdot 3^{-\frac{5t}{2}}}{5 \log(3)} & \quad (36) \\
 \frac{10t}{3} & \quad (17) & C - \frac{3 \cdot 2^{-5x}}{5b \log(2)} & \quad (37) \\
 3 \cdot 3^{4t} \log(3) & \quad (18) & -\frac{3a}{t^4} & \quad (38) \\
 0 & \quad (19) & 6 \cdot 3^{3t} \log(3) & \quad (39) \\
 10x^3 & \quad (20) & \frac{3\pi^{kx}}{4k \log(\pi)} + C & \quad (40) \\
 & & \frac{2^{3t}}{3 \log(2)} + C & \quad (41)
 \end{aligned}$$

$$5t \quad (42)$$

$$0 \quad (43)$$

$$-\frac{2k}{b}4^{-kx}\log(4) \quad (44)$$

$$\frac{9x^2}{4} \quad (45)$$

$$4x^3 \quad (46)$$

$$2^{5x}\log(2) \quad (47)$$

$$\frac{2a}{15}3^{\frac{2t}{3}}\log(3) \quad (48)$$

$$C+\frac{ax}{2} \quad (49)$$

$$-\frac{4^{-t}}{b}\log(4) \quad (50)$$

$$-\frac{2}{t^3} \quad (51)$$

$$0 \quad (52)$$

$$C+\frac{t}{4} \quad (53)$$

$$4 \quad (54)$$

$$C+\frac{x^2}{b} \quad (55)$$

$$-\frac{16}{5}\pi^{-4t}\log(\pi) \quad (56)$$

$$-\frac{10}{3}4^{-5t}\log(4) \quad (57)$$

$$-\frac{1}{2}5^{-2x}\log(5) \quad (58)$$

$$C+6e^{\frac{2t}{3}} \quad (59)$$

$$C+\frac{at^5}{20} \quad (60)$$

$$\frac{4^{2t}}{b\log(2)}+C \quad (61)$$

$$5\pi^{5t}\log(\pi) \quad (62)$$

$$-\frac{5}{3t^2} \quad (63)$$

$$C+\frac{10t^{\frac{3}{2}}}{3} \quad (64)$$

$$\frac{8t^3}{3} \quad (65)$$

$$C+\frac{4t}{5} \quad (66)$$

$$C+\frac{5t}{4} \quad (67)$$

$$\frac{5}{3} \quad (68)$$

$$\frac{5^t}{b}\log(5) \quad (69)$$

$$\frac{5^t}{4\log(5)}+C \quad (70)$$

$$\frac{5t}{2} \quad (71)$$

$$-\frac{3}{t^2} \quad (72)$$

$$C+\frac{3}{b}\left(\begin{cases}\log(x) & \text{for } n=-1 \\ \frac{x^{n+1}}{n+1} & \text{otherwise}\end{cases}\right) \quad (73)$$

$$C+4\left(\begin{cases}\log(x) & \text{for } n=-1 \\ \frac{x^{n+1}}{n+1} & \text{otherwise}\end{cases}\right) \quad (74)$$

$$C+\frac{at}{2} \quad (75)$$

3 Class1 - Student 3 - Derivatives and anti-derivatives (Solutions)

$$\frac{5^{\frac{5x}{2}}}{2\log(5)} + C \quad (1)$$

$$\frac{4}{3}\pi^{2x}\log(\pi) \quad (2)$$

$$\frac{3 \cdot 5^{4x}}{16\log(5)} + C \quad (3)$$

$$C + \frac{1}{3} \left(\begin{cases} \log(t) & \text{for } \frac{n}{2} = -1 \\ t^{\frac{\frac{n}{2}+1}{\frac{n}{2}+1}} & \text{otherwise} \end{cases} \right) \quad (4)$$

$$\frac{3 \cdot 2^{kx}}{bk\log(2)} + C \quad (5)$$

$$\frac{5^{2t}}{b\log(5)} + C \quad (6)$$

$$\frac{2 \cdot 3^{\frac{3t}{2}}}{3\log(3)} + C \quad (7)$$

$$\frac{3e^x}{b} \quad (8)$$

$$C + \frac{e^t}{2} \quad (9)$$

$$\frac{2}{5} \quad (10)$$

$$0 \quad (11)$$

$$-\frac{25}{3}5^{-5x}\log(5) \quad (12)$$

$$C + \frac{3x}{4} \quad (13)$$

$$5t \quad (14)$$

$$\frac{4nx^n}{bx} \quad (15)$$

$$C + \frac{x^2}{10} \quad (16)$$

$$\frac{6\pi^{\frac{x}{3}}}{5\log(\pi)} + C \quad (17)$$

$$\frac{3 \cdot 5^{\frac{t}{3}}}{2\log(5)} + C \quad (18)$$

$$0 \quad (19)$$

$$C + \frac{8t^{\frac{3}{2}}}{3} \quad (20)$$

$$-\frac{anx^{-n}}{4x} \quad (21)$$

$$-2\pi^{-\frac{5t}{2}}\log(\pi) \quad (22)$$

$$C + \frac{t}{3} \quad (23)$$

$$-\frac{2a}{t^3} \quad (24)$$

$$\frac{3^{\frac{5x}{2}}}{5\log(3)} + C \quad (25)$$

$$\frac{3^{4x}}{3\log(3)} + C \quad (26)$$

$$C + \frac{x^5}{4} \quad (27)$$

$$\frac{5^{5x}}{20\log(5)} + C \quad (28)$$

$$-\frac{25e^{-\frac{5t}{3}}}{3b} \quad (29)$$

$$\frac{5 \cdot 5^{kx}}{4k\log(5)} + C \quad (30)$$

$$\frac{25}{4}3^{5x}\log(3) \quad (31)$$

$$\frac{nt^{\frac{n}{2}}}{2t} \quad (32)$$

$$C + \frac{a}{3} \left(\begin{cases} \log(x) & \text{for } \frac{n}{2} = -1 \\ x^{\frac{\frac{n}{2}+1}{\frac{n}{2}+1}} & \text{otherwise} \end{cases} \right) \quad (33)$$

$$\frac{\pi^{3x}}{b\log(\pi)} + C \quad (34)$$

$$\frac{5\pi^t}{2\log(\pi)} + C \quad (35)$$

$$2^{4x}a\log(2) \quad (36)$$

$$\frac{3a}{2}5^{3t}\log(5) \quad (37)$$

$$C + \frac{t^3}{3} \quad (38)$$

$$\begin{aligned}
C + 2t & (39) \\
\frac{15}{4} 2^{5x} \log(2) & (40) \\
-\frac{2a}{bt^3} & (41) \\
\frac{4nt^{\frac{n}{3}}}{3bt} & (42) \\
\frac{1}{b} & (43) \\
\frac{9 \cdot 2^{\frac{5t}{3}}}{25 \log(2)} + C & (44) \\
\frac{\pi^{2x}}{4 \log(\pi)} + C & (45) \\
C + \frac{e^{\frac{kx}{2}}}{k} & (46) \\
1 & (47) \\
C + \frac{5}{b} \log(t) & (48) \\
C + 2 \left(\begin{cases} \log(x) & \text{for } \frac{n}{2} = -1 \\ \frac{x^{\frac{n}{2}+1}}{\frac{n}{2}+1} & \text{otherwise} \end{cases} \right) & (49) \\
C - \frac{\pi^{-5x}}{5 \log(\pi)} & (50) \\
\frac{2n}{x} x^n & (51) \\
-\frac{10}{b} 3^{-5x} \log(3) & (52) \\
\frac{5}{b} 2^{5x} \log(2) & (53) \\
\frac{4 \cdot 2^{5t}}{25 \log(2)} + C & (54) \\
C - \frac{5}{2} e^{-x} & (55) \\
C - \frac{5^{-t}}{\log(5)} & (56) \\
\frac{2\pi^x}{3 \log(\pi)} + C & (57) \\
C + \frac{1}{5} \left(\begin{cases} \log(t) & \text{for } n = -1 \\ \frac{t^{n+1}}{n+1} & \text{otherwise} \end{cases} \right) & (58) \\
\frac{3}{4} & (59) \\
6t^2 & (60) \\
\frac{5a}{b} 2^{5t} \log(2) & (61) \\
5 \cdot 4^{5t} a \log(4) & (62) \\
-\frac{3}{x^4} & (63) \\
\frac{2n}{x} x^{\frac{n}{2}} & (64) \\
15t^2 & (65) \\
C - \frac{3^{-t}}{2 \log(3)} & (66) \\
C + \frac{x^3}{4} & (67) \\
-\frac{4a}{b} 4^{-4x} \log(4) & (68) \\
C + \frac{a}{2} \left(\begin{cases} \log(t) & \text{for } n = -1 \\ \frac{t^{n+1}}{n+1} & \text{otherwise} \end{cases} \right) & (69) \\
\frac{3\pi^t}{2 \log(\pi)} + C & (70) \\
\frac{8}{5} 5^{4t} \log(5) & (71) \\
C + \frac{x^2}{4} & (72) \\
\frac{ak}{10} 5^{\frac{kt}{2}} \log(5) & (73) \\
\frac{1}{3} & (74) \\
C + \frac{x^3}{4} & (75)
\end{aligned}$$