

INTEGRATION

BY A SPECIAL MANIPULATION

Question 1

Carry out the following integrations:

1. $\int \frac{x+1}{x-1} dx = x + 2 \ln|x-1| + C$

2. $\int \frac{x-2}{x+2} dx = x - 4 \ln|x+2| + C$

3. $\int \frac{x+2}{x+5} dx = x - 3 \ln|x+5| + C$

4. $\int \frac{x-3}{x-8} dx = x + 5 \ln|x-8| + C$

5. $\int \frac{2x-3}{x+2} dx = 2x - 7 \ln|x+2| + C$

6. $\int \frac{3x-1}{x-1} dx = 3x + 2 \ln|x-1| + C$

7. $\int \frac{4x+3}{2x-1} dx = 2x + \frac{5}{2} \ln|2x-1| + C$

8. $\int \frac{3-x}{x-1} dx = -x + 2 \ln|x-1| + C$

9. $\int \frac{x+3}{2x-1} dx = \frac{1}{2}x + \frac{7}{4} \ln|2x-1| + C$

10. $\int \frac{3x+1}{2x-1} dx = \frac{3}{2} + \frac{5}{4} \ln|2x-1| + C$

1. $\int \frac{x+1}{x-1} dx = \int \frac{(x-1)+2}{(x-1)} dx = \int 1 + \frac{2}{x-1} dx = x + 2\ln|x-1| + C$
2. $\int \frac{x-2}{x+2} dx = \int \frac{(x+2)-4}{(x+2)} dx = \int 1 - \frac{4}{x+2} dx = x - 4\ln|x+2| + C$
3. $\int \frac{3x-2}{2x+5} dx = \int \frac{(2x+5)-x-7}{(2x+5)} dx = \int 1 - \frac{x+7}{2x+5} dx = x - \frac{1}{2}\ln|2x+5| + C$
4. $\int \frac{x-3}{x-8} dx = \int \frac{(x-8)+5}{(x-8)} dx = \int 1 + \frac{5}{x-8} dx = x + 5\ln|x-8| + C$
5. $\int \frac{2x-3}{x+2} dx = \int \frac{2(x+2)-7}{(x+2)} dx = \int 2 - \frac{7}{x+2} dx = 2x - 7\ln|x+2| + C$
6. $\int \frac{3x-1}{x-1} dx = \int \frac{3(x-1)+2}{(x-1)} dx = \int 3 + \frac{2}{x-1} dx = 3x + 2\ln|x-1| + C$
7. $\int \frac{4x+3}{2x-1} dx = \int \frac{2(2x-1)+5}{(2x-1)} dx = \int 2 + \frac{5}{2x-1} dx = 2x + \frac{5}{2}\ln|2x-1| + C$
8. $\int \frac{3-x}{x-1} dx = \int \frac{-(x-1)+2}{x-1} dx = \int -1 + \frac{2}{x-1} dx = -x + 2\ln|x-1| + C$
9. $\int \frac{x+3}{2x-1} dx = \int \frac{\frac{1}{2}(2x-1) + \frac{7}{2}}{(2x-1)} dx = \int \frac{1}{2} + \frac{7\frac{1}{2}}{2x-1} dx = \frac{1}{2}x + \frac{7}{4}\ln|2x-1| + C$
10. $\int \frac{3x+1}{2x-1} dx = \int \frac{\frac{3}{2}(2x-1) + \frac{5}{2}}{(2x-1)} dx = \int \frac{3}{2} + \frac{5\frac{1}{2}}{2x-1} dx = \frac{3}{2}x + \frac{5}{4}\ln|2x-1| + C$