

# Antiderivatives (4)

Find the general antiderivative

1.  $f(x) = \frac{2}{5x-3}$

2.  $f(x) = \frac{4}{(5x-3)^2}$

3.  $f(x) = \sin 2x$

4.  $f(x) = \sin 4x \cos^2 4x$

5.  $f(x) = 4x^2 e^{5x^3}$

6.  $f(x) = x^4 \sin 6x^5$

7.  $f(x) = \frac{4}{\sqrt{2x-3}}$

8.  $f(x) = \frac{6x}{\sqrt[3]{x^2-9}}$

9.  $f(x) = \frac{6x^2}{4x^3+17}$

10.  $f(x) = \sin x e^{\cos x}$

11.  $f(x) = \frac{1}{4x}$

12.  $f(x) = \frac{1}{\sqrt{3x}}$

13.  $f(x) = 2x^2(5x^3-6)^4$

14.  $f(x) = (2x-3)(4x^2-12x)$

15.  $f(x) = \frac{2 \cos x}{1-\sin x}$

16.  $f(x) = \sin 4x \cos^2 4x e^{\cos^3 4x}$

17. A particle moves on a line so  $a = 6t - 30m/s^2$ . If  $v=15$  m/s and  $s=85$  s when  $t=2$ s, find  
a) the displacement at  $t=10$  s  
b) the total distance traveled in those 10 s.

Answers

1.  $\frac{2}{5} \ln(5x-3) + c$  2.  $\frac{-4}{5(5x-3)} + c$  3.  $-\frac{1}{2} \cos 2x + c$  4.  $-\frac{1}{12} \cos^3 4x + c$  5.  $\frac{4}{15} e^{5x^3} + c$

6.  $-\frac{1}{30} \cos 6x^3 + c$  7.  $4\sqrt{2x-3} + c$  8.  $\frac{9}{2}(x^2-9)^{\frac{3}{2}} + c$  9.  $\frac{1}{2} \ln(4x^3+17) + c$  10.  $-e^{\cos x} + c$

11.  $\frac{1}{4} \ln 4x + c$  12.  $\frac{2}{\sqrt{3}} \sqrt{x} + c$  13.  $\frac{2}{75}(5x^3-6)^5 + c$  14.  $\frac{1}{16}(4x^2-12x)^4 + c$

15.  $-2 \ln(1-\sin x) + c$  16.  $-\frac{1}{12} e^{\cos^3 4x} + c$  17a. 141 m b. 194 m

1. Antidifferentiate

a)  $y' = 5x^4 - \frac{4}{5}x^3 - 1$

b)  $f'(x) = \frac{4}{\sqrt{2x-3}}$

c)  $y' = x^2 \sec^2 x^3$

d)  $f'(x) = \frac{e^{\ln x}}{x}$

e)  $g'(x) = \sin x e^{\cos x}$

f)  $y' = \frac{6}{3x-2}$

g)  $f'(x) = \frac{1}{\sqrt{3x}}$

h)  $y' = \frac{2 \cos x}{1 - \sin x}$

i)  $f'(x) = 2x^2(5x^3 - 6)^4$

j)  $y' = \sin 5x \cos^5 5x$