

LAGRANGE'S FORM OF REMAINDER

For the following functions, find Lagrange's form of the remainder for the given values of a and n .

1) e^{2x} ; $a = 0$, $n = 5$

2) $\frac{1}{x+1}$, $a = 0$, $n = 4$

3) xe^x , $a = 0$, $n = 3$

4) $\tan^{-1}x$, $a = 0$, $n = 2$

5) \sqrt{x} , $a = 4$, $n = 3$

6) $\sin x$, $a = \frac{\pi}{6}$, $n = 4$

7) $\frac{1}{(1+x)^2}$, $a = -2$, $n = 5$

Find Lagrange's form of the remainder $R_n(x)$ when $a = 0$

8) $f(x) = \frac{1}{1-x}$

9) $f(x) = e^{2x}$

ANSWERS

$$1) \frac{2^6 e^{2c}}{6!} x^6$$

$$2) -\frac{x^5}{(c+1)^6}$$

$$3) \frac{(4+c)e^c}{4!} x^4$$

$$4) -\frac{(1-3c^2)}{3(1+c^2)^3} x^3$$

$$5) -\frac{5}{128c^{7/2}} (x-4)^4$$

$$6) \frac{\cos c}{5!} \left(x - \frac{p}{6}\right)^5$$

$$7) \frac{7}{(1+c)^8} (x+2)^6$$

$$8) \frac{x^{n+1}}{(1-c)^{n+2}}$$

$$9) \frac{2^{n+1} e^{2c}}{(n+1)!} x^{n+1}$$