

# Metodo di Newton-Cotes

## - Note

### - Autore

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### - Versione

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Maple V Release 6.02 for Windows 2000

```
[ > restart:
```

```
[ > with(linalg):
```

```
Warning, the protected names norm and trace have been redefined and unprotected
```

```
[ Procedura per il calcolo dei pesi per il metodo di Newton-Cotes di grado n
```

```
[ > Metodo_di_Newton_Cotes := proc(n::posint)
  local A, i, j;
  A := matrix(n+1, n+2);
  for i from 1 to n+2 do A[1,i]:= 1; end do:
  for j from 2 to n+1 do A[j,1] := 0; end do:
  for i from 2 to n+1 do
    for j from 2 to n+1 do
      A[i,j] := (j-1)^(i-1);
    end do;
  end do;
  for j from 2 to n+1 do A[j,n+2] := A[j,n+1]/j; end do:
  A := rref(A);
  return(backsub(A));
end proc;
```

```
Metodo_di_Newton_Cotes := proc(n::posint)
```

```
local A, i, j;
  A := matrix(n + 1, n + 2);
  for i to n + 2 do A[1, i] := 1 end do;
  for j from 2 to n + 1 do A[j, 1] := 0 end do;
  for i from 2 to n + 1 do for j from 2 to n + 1 do A[i, j] := (j - 1)^(i - 1) end do end do
  ;
  for j from 2 to n + 1 do A[j, n + 2] := A[j, n + 1] / j end do;
  A := rref(A);
  return backsub(A)
```

**end proc**

n = 1 (metodo della secante)

> **Metodo\_di\_Newton\_Cotes(1);**

$$\left[ \frac{1}{2}, \frac{1}{2} \right]$$

n = 2 (metodo di Simpson)

> **Metodo\_di\_Newton\_Cotes(2);**

$$\left[ \frac{1}{6}, \frac{2}{3}, \frac{1}{6} \right]$$

n = 3 (formula dei 3/8 di Newton)

> **Metodo\_di\_Newton\_Cotes(3);**

$$\left[ \frac{1}{8}, \frac{3}{8}, \frac{3}{8}, \frac{1}{8} \right]$$

n = 4 (formula di Bode)

> **Metodo\_di\_Newton\_Cotes(4);**

$$\left[ \frac{7}{90}, \frac{16}{45}, \frac{2}{15}, \frac{16}{45}, \frac{7}{90} \right]$$

n = 5

> **Metodo\_di\_Newton\_Cotes(5);**

$$\left[ \frac{19}{288}, \frac{25}{96}, \frac{25}{144}, \frac{25}{144}, \frac{25}{96}, \frac{19}{288} \right]$$