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pade := proc(f :: procedure, m :: nonnegint, n :: nonnegint, x :: name)
  uses LinearAlgebra;
  local c, p, C, bv, bn, i, j, a, b, l;

  for p from 0 to m + n do # construim matricea coeficientilor Maclaurin
    c[p] := coeftayl(f(x), x=0, p);
  end do;

  C := ToeplitzMatrix([seq(c[m + i], i=-n + 1 .. n - 1)]);
  bv := <seq(-c[m + i], i = 1 .. n)>;

  bn := LinearSolve(C, bv);
  b[0] := 1;
  for i from 1 to n do
    b[i] := bn[i];
  end do;
  if m > n then
    for i from n + 1 to m do
      b[i] := 0;
    end do;
  end if;

  for j from 0 to m do
    a[j] := sum(c[j - l]·b[l], l=0 ..j);
  end do;

  return  $\frac{\text{sum}(a[pp] \cdot x^{pp}, pp = 0 \dots m)}{\text{sum}(b[pp] \cdot x^{pp}, pp = 0 \dots n)}$ ;
end proc;

```

pade := proc(f:procedure, m::nonnegint, n::nonnegint, x:name) (1)

```

  local c, p, C, bv, bn, i, j, a, b, l;
  for p from 0 to m + n do c[p] := coeftayl(f(x), x=0, p) end do;
  C := LinearAlgebra:-ToeplitzMatrix([seq(c[m + i], i = -n + 1 ..n - 1)]);
  bv := <seq(-c[m + i], i = 1 ..n)>;
  bn := LinearAlgebra:-LinearSolve(C, bv);
  b[0] := 1;
  for i to n do b[i] := bn[i] end do;
  if n < m then for i from n + 1 to m do b[i] := 0 end do end if;
  for j from 0 to m do a[j] := sum(c[j - l]*b[l], l=0 ..j) end do;
  return sum(a[pp]*x^pp, pp=0 ..m) / sum(b[pp]*x^pp, pp=0 ..n)
end proc

```

> R22 := pade(exp, 2, 2, x);

$$R22 := \frac{1 + \frac{1}{2}x + \frac{1}{12}x^2}{1 - \frac{1}{2}x + \frac{1}{12}x^2}$$

(2)

>

$R33 := pade(\exp, 3, 3, x);$

$R33 := \frac{1 + \frac{1}{2} x + \frac{1}{10} x^2 + \frac{1}{120} x^3}{1 - \frac{1}{2} x + \frac{1}{10} x^2 - \frac{1}{120} x^3}$

(3)