

Einführung in Matlab

Lösungen 12

Aufgabe 1:

```
% weitere Methoden
function p=plus(p1,p2)
if ~isa(p1,'polynom')
    p1=polynom(p1);
elseif ~isa(p2,'polynom')
    p2=polynom(p2);
end
n1=numel(p1.koeff);
n2=numel(p2.koeff);
n=max(n1,n2);
a=[zeros(1,n-n1),p1.koeff]+[zeros(1,n-n2),p2.koeff];
p=polynom(a);
end

function p=minus(p1,p2)
...
a=[zeros(1,n-n1),p1.koeff]-[zeros(1,n-n2),p2.koeff];
...
end

function p=mtimes(p1,p2)
if ~isa(p1,'polynom')
    p1=polynom(p1);
elseif ~isa(p2,'polynom')
    p2=polynom(p2);
end
a=conv(p1.koeff,p2.koeff);
p=polynom(a);
end

function p=uplus(p)
end

function p=uminus(p)
p=polynom(-p.koeff);
end

function pn=mpower(p,n)
if n==0
    pn=polynom(1);
else
    pn=p*p^(n-1);
end
end

function e=eq(p1,p2)
if ~isa(p1,'polynom')
    p1=polynom(p1);
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elseif ~isa(p2,'polynom')
    p2=polynom(p2);
end
a1=p1.koeff;
a2=p2.koeff;
e=(numel(a1)==numel(a2)) && all(a1==a2);
end

function dp=ableitung(p)
n=numel(p.koeff);
if n==1
    a=0;
else
    a=(n-1:-1:1).*p.koeff(1:n-1);
end
dp=polynom(a);
end

function P=stammfunktion(p)
n=numel(p.koeff);
a=[p.koeff./(n:-1:1),0];
P=polynom(a);
end

function pt=auswerten(p,t)
pt=polyval(p.koeff,t);
end

function disp(p)
a=p.koeff;
n=numel(a);
ind=find(a); % finde Indizes für Einträge ungleich 0
m=numel(ind);
if m>0
    s=[];
    for k=1:numel(ind)
        if a(ind(k))>0
            s=[s,'_+'];
        else
            s=[s,'_-'];
        end
        s=[s,num2str(abs(a(ind(k))))];
        if ind(k)<=n-1
            s=[s,'*x'];
            if ind(k)<n-1
                s=[s,'^',num2str(n-ind(k))];
            end
        end
    end
end
else
    s='0';
end
disp(s);
end

```