International Journal of Mathematical Archive-2(8), 2011, Page: 1435-1441
Available online through www.ijma.info ISSN 2229 – 5046

A COMMON FIXED POINT THEOREM FOR SIX MAPPINGS

[1]V. H. Badshah, [2]Rekha Jain* and [3]Saurabh Jain

[1]*School of Studies in Mathematics, Vikram University, Ujjain 456010, India*

[2]*Medi-Caps Institute of Technology and Management, Indore, (M.P.), India*

[3]*Indore Institute of Science and Technology, Indore, (M.P.), India*

*E-mail: *rjain5129@yahoo.com, sj5129@yahoo.com*

(Received on: 04-08-11; Accepted on: 17-08-11)

ABSTRACT

Using notion of compatibility, weak compatibility and commutatively we have generalized fixed point theorem for six mappings satisfying rational inequality.

---

1. INTRODUCTION AND PRELIMINARIES

The concept of common fixed point theorem for commuting mapping was given by Jungck [4]. The notion of weak commutativity was introduced by Sessa [6]. Imdad and Khan [5] has proved a common fixed point theorem for six mappings which was extension of Fisher [1] and Jeong- Rhoades [3].

Definition: 1.1 [6]: A pair of self-mapping *(A, B)* on a metric space *(X, d)* is said to be weakly commuting if $d(ABx, BAx) \leq d(Bx, Ax)$ for all x in X. Obviously, commuting mappings are weakly commuting but the converse is not necessarily true.

Definition 1.2[4]: A pair of self mappings *(A, B)* of a metric space *(X, d)* is said to be compatible if
$\lim_{n\to\infty} Ax_n = \lim_{n\to\infty} Bx_n = t \in X$. Obviously, weakly commuting mappings are compatible but the converse is not necessarily true.

The following theorem is given by Fisher [1]

Theorem 1.1: Let S and T be tow self mappings of a complete metric space *(X, d)* such that for all *x, y* in *X* either

(a) $$d(Sx,Ty) \leq \frac{b\left[d(x,Ty)\right]^2 + c\left[d(y,Sx)\right]^2}{d(x,Ty)+d(y,Sx)}$$

If $d(x,Ty)+d(y,Sx) \neq 0$, $0 \leq b, c, b + c < 1$ or

(b) $d(Sx,Ty) = 0 \; if \; d(x,Ty)+d(y,Sx) = 0$

If one of S or T is continuous than S and T have a unique common fixed point.

Motivated by Fisher [2] and imdad and khan [5], in the present paper, an extension of theorem 1.1 is generalized for power n by improving the contraction condition and choosing suitable weak commutativity conditions.

2 MAIN RESULT

We prove the following

Theorem 2.1: Let A, B; S, T, I and J be self mappings of a complete metric space (X, d) satisfying $AB(X) \subset J(X)$, $ST(X) \subset I(X)$ and for each x, y Є X either

---

Corresponding author: [2]Rekha Jain, *E-mail: rjain5129@yahoo.com*

$$d(ABx, STy) \le \alpha_1 \left[\frac{[d(ABx, Jy)]^n + [d(STy, Ix)]^n}{[d(ABx, Jy)]^{n-1} + [d(STy, Ix)]^{n-1}} \right] + \alpha_2 [d(ABx, Ix) + d(STy, Jy)] + \alpha_3 d(Ix, Jy) \tag{2.1}$$

$if d(ABx, Jy)^{n-1} + d(STy,\ Ix)^{n-1} \ne 0$, $\alpha_i \ge, 0$ (i = 1, 2, 3) with atleast one α_i non zero and

$$2\alpha_1 + 2\alpha_2 + \alpha_3 < 1 \text{ or } d(ABx, STy) = 0 if [d(ABx, Jy)]^{n-1} + [d(STy, Ix)]^{n-1} = 0 \tag{2.2}$$

If either

(i) {AB, I} are compatible, I or AB is continuous and (ST, J) are weakly compatible,
or
(ii) {ST, J} are compatible, J or ST is continuous and (AB, I) are weakly compatible then AB, ST, I and J have a unique common fixed point. Furthermore if the pairs (A, B), (A, I), (B, I), (S, T), (S, J), (T, J) are commuting mappings then A, B, S, T, I and J have a unique common fixed point.''

Proof: Let x_0 be an arbitrary point in X. Since AB(X) $\subset$ J(X) we can find a point x_1 in X such that AB x_0 = Jx_1. Also since ST(X) subset of I(X) we can choose a point x_2 with STx_1 = I x_2. Using this argument repeatedly one can construct a sequence $\{z_n\}$ such that $z_{2n} = ABx_{2n} = J\, x_{2n+1}$, $z_{2n+1} = STx_{2n+1} = I\, x_{2n+2}$ for n = 0, 1, 2…..

For brevity let us put

$u_{2n} = d\,(ABx_{2n}\,, STx_{2n+1})$ and $u_{2n+1} = d\,(STx_{2n+1}\,, ABx_{2n+2})$ for n = 0, 1, 2…… Now we distinguish two cases:

(i) Suppose that $u_{2n} + u_{2n+1} \ne 0$ for n = 0, 1, 2…..

Then using the inequality (2.1.1), we have

$$u_{2n+1} = d(z_{2n+1},\ z_{2n+2}) = d(STx_{2n+1}, ABx_{2n+2})$$

$$\le \alpha_1 \left[\frac{[d(ABx_{2n+1}, Jx_{2n+1})]^n + [d(STx_{2n+1}, Ix_{2n+1})]^n}{[d(ABx_{2n+2}, Jx_{2n+1})]^{n-1} + [d(STx_{2n+1}, Ix_{2n+2})]^{n-1}} \right] + \alpha_2 [d(ABx_{2n+1}, Ix_{2n+2}) + d(STx_{2n+1}, Jy_{2n+2})] + \alpha_3 d(Ix_{2n+2}, Jy_{2n+1})$$

or

$$d(z_{2n+1}, z_{2n+2}) \le \frac{\alpha_1 + \alpha_2 + \alpha_3}{1 - \alpha_1 - \alpha_2} d(z_{2n}, z_{2n+1})$$

Similarly we can show that

$$d(z_{2n}, z_{2n+1}) \le \frac{\alpha_1 + \alpha_2 + \alpha_3}{1 - \alpha_1 - \alpha_2} d(z_{2n-1}, z_{2n})$$

thus for every n we have $d(z_n, z_{n+1}) \le kd(z_{n-1}, z_n)$ (2.3)

which shows that $\{z_n\}$ is a cauchy sequence in the complete metric space (X, d) and so has a limit point z in X. hence the sequence $ABx_{2n} = Jx_{2n+1}$ and $STx_{2n+1} = Ix_{2n+2}$ which are subsequences also converge to the point z.

let us now assume that I is continuous so that the sequence $\{I^2 x_{2n}\}$ and $\{IABx_{2n}\}$ converges to Iz. Also in view of compatibility of $\{I, AB\}$, $\{ABIx_{2n}\}$ converges to Iz.

$$d\left(ABIx_{2n}, STx_{2n+1}\right) \le \alpha_1 \left[\frac{\left[d\left(ABIx_{2n}, Jx_{2n+1}\right)\right]^n + \left[d\left(STx_{2n+1}, I^2x_{2n}\right)\right]^n}{\left[d\left(ABIx_{2n}, Jx_{2n+1}\right)\right]^{n-1} + \left[d\left(STx_{2n+1}, I^2x_{2n}\right)\right]^{n-1}} + \alpha_2\left[d\left(ABz, Iz\right) + d\left(STx_{2n+1}, Jx_{2n+1}\right) + \alpha_3\left[d\left(Iz, Jx_{n+1}\right)\right]\right]\right]$$

Which on letting $n \to \infty$ reduces to $\left(1-\alpha_1-\alpha_3\right) d\left(Iz, z\right) \le 0$

yielding thereby $Iz = z$

Now,

$$d\left(ABz, STx_{2n+1}\right) \le \alpha_1 \left[\frac{\left[d\left(ABz, Jx_{2n+1}\right)\right]^n + \left[d\left(STx_{2n+1}, Iz\right)\right]^n}{\left[d\left(ABz, Jx_{2n+1}\right)\right]^{n-1} + \left[d\left(STx_{2n+1}, Iz\right)\right]^{n-1}} \right] + \alpha_2\left[d\left(ABz, Iz\right) + d\left(STx_{2n+1}, Jx_{2n+1}\right)\right] + \alpha_3\left[d\left(Iz, Jx_{n+1}\right)\right]$$

On letting and using $Iz = z$ we get

$$d\left(ABz, z\right) \le \left(\alpha_1 + \alpha_2\right) d\left(ABz, z\right)$$

This implies $AB\, z = z$

Since $AB\left(x\right) \subset J\left(x\right)$ then there always exists a point z' such that $Jz' = z$ so that $STz = ST\left(Jz'\right)$

Now

$$\begin{aligned} d(z, STz) &= d(ABz, STz) \\ &\le \alpha_1 \left[\frac{\left[d\left(ABz, Jz'\right)\right]^n + \left[d\left(STz', Iz\right)\right]^n}{\alpha\left(ABz, Jz'\right)^{n-1} + d\left(STz', Iz\right)^{n-1}} \right] + \alpha_2\left[d\left(ABz, Iz\right) + d\left(STz', Jz'\right)\right] + \alpha_3\, d\left(Iz, Jz'\right) \\ &\le \left(\alpha_1 + \alpha_2\right)\left[d\left(STz', z\right)\right] \end{aligned}$$

Hence, *STz' =z= Jz'* which shows that *z'* is a common point of *AB, I, ST* and *J*. Now using the weak compatibility of $\left(ST, J\right)$, we have $STz = ST(Jz') = J(STz') = Jz$ which shows that *z* is also a coincidence point of the pair (ST, J). Now

$$\begin{aligned} d\left(z, STz\right) &= d\left(ABz, STz\right) \\ &\le \alpha_1 \left[\frac{\left[d\left(ABz, Jz\right)\right]^n + \left[d\left(STz, Iz\right)\right]^n}{\alpha\left(ABz, Jz\right)^{n-1} + d\left(STz, Iz\right)^{n-1}} \right] + \alpha_2\left[d\left(ABz, Iz\right) + d\left(STz, Jz\right)\right] + \alpha_3 d\left(Iz, Jz\right) \\ &\le \left(\alpha_1 + \alpha_3\right) d\left(z, STz\right) \end{aligned}$$

Hence $z = STz = Jz$ which shows that z is a common fined point of AB, I, ST and J.

Now suppose that AB is continuous so that the sequences $\left\{AB^2x_{2n}\right\}$ and $\left\{ABIx_{2n}\right\}$ converge to ABz, since $\left(AB, I\right)$ are compatible it follows that $\left\{IABx_{2n}\right\}$ also converge to ABz, thus

$$d\left(AB^2x_{2n}, STx_{2n+1}\right) \le \alpha_1\left[\frac{\left[d\left(AB^2x_{2n}, Jx_{2n+1}\right)\right]^n + \left[d\left(STx_{2n+1}, IABx_{2n}\right)\right]^n}{\left[d\left(AB^2x_{2n}, Jx_{2n+1}\right)\right]^{n-1} + \left[d\left(STx_{2n+1}, IABx_{2n}\right)\right]^{n-1}}\right]$$
$$+\alpha_2\left[d\left(AB^2x_{2n}, IABx_{2n}\right) + d\left(STx_{2n+1}, Jx_{2n+1}\right)\right] + \alpha_3\, d\left(IABx_{2n}, Jx_{2n+1}\right)$$

which on letting $n \to \infty$ reduces to

$$d\left(ABz, z\right) \le \left(\alpha_1 + \alpha_3\right) d\left(ABz, z\right)$$

which implies $ABz = z$ as earlier, there exists z' is X such that

$ABz = z = Jz'$ then

$$d\left(AB^2x_{2n}, STz'\right) \le \alpha_1\left[\frac{\left[d\left(AB^2x_{2n}, Jz'\right)\right]^n + \left[d\left(STz', IABx_{2n}\right)\right]^n}{\left[d\left(AB^2x_{2n}, Jz'\right)\right]^{n-1} + \left[d\left(STz', IABx_{2n}\right)\right]^{n-1}}\right]$$
$$+\alpha_2\left[d\left(AB^2x_{2n}, IABx_{2n}\right) + d\left(STz', Jz'\right)\right] + \alpha_3\, d\left(IABx_{2n}, Jz'\right)$$

This on letting $n \to \infty$ reduces to

$$d\left(z, STz'\right) \le \left(\alpha_1 + \alpha_2\right) d\left(z, STz'\right)$$

This gives $STz' = z = Jz'$ thus z' is a coincidence point of (ST, J). since, the pair (ST, J) is weakly compatible hence $STz = ST(Jz') = J(STz') = Jz$ which shows that $STz = Jz$ further,

$$d\left(ABx_{2n}, STz\right) \le \alpha_1\left[\frac{\left[d\left(ABx_{2n}, Jz\right)\right]^n + \left[d\left(STz, Ix_{2n}\right)\right]^n}{\left[d\left(ABx_{2n}, Jz\right)\right]^{n-1} + \left[d\left(STz, Ix_{2n}\right)\right]^{n-1}}\right]$$
$$+\alpha_2\left[d\left(ABx_{2n}, Ix_{2n}\right) + d\left(STz, Jz\right)\right] + \alpha_3\, d\left(Ix_{2n}, Jz\right)$$

which on letting $n \to \infty$ reduces to

$$d\left(z, STz\right) \le \left(\alpha_1 + \alpha_3\right) d\left(z, STz\right)$$
$$d\left(STz, z\right) = 0$$

it follows that $STz = z = Jz$

The point z therefore is in the range of ST and since $ST\left(X\right) \subset I\left(X\right)$ there exist a point z'' in X such that $Iz'' = z$ thus

$$d\left(ABz'', z\right) = d\left(ABz'', STz\right) \le \alpha_1 \frac{\left[d\left(ABz'', Jz\right)\right]^n + \left[d\left(STz, Iz''\right)\right]^n}{\left[d\left(ABz'', Jz\right)\right]^{n-1} + \left[d\left(STz, Iz''\right)\right]^{n-1}}$$
$$+\alpha_2\left[d\left(ABz'', Iz''\right) + d\left(STz, Jz\right)\right] + \alpha_3\, d\left(Iz'', Jz\right)$$

Letting $n \to \infty$

$$d\left(ABz'' z\right) \le \left(\alpha_1 + \alpha_2\right) d\left(ABz'', z\right)$$

which shows that $ABz'' = z$

Also since (AB, I) are compatible and hence using weakly commuting we obtain

$$\begin{aligned} d(ABz, Iz) &= d\left(AB(Iz''), I(ABz'')\right) \\ &\leq d(Iz'', ABz'') = d(z, z) = 0 \end{aligned}$$

Therefore $ABz = Iz = z$

Thus we have proved that z is common fixed point of AB, ST, I and J.

If the mappings ST or J is continuous instead of AB or I then proof of z is a common fixed point of AB, ST, I and J is similar.

Let v be another fixed point of I, J, AB and ST

then

$$\begin{aligned} d(z, v) &= d(ABz, STv) \\ &\leq \alpha_1 \left[\frac{\left[d(ABz, Jv)\right]^n + \left[d(STv, Iz)\right]^n}{\left[d(ABz, Jv)\right]^{n-1} + \left[d(STv, Iz)\right]^{n-1}} \right] \\ &+\alpha_2 \left[d(ABz, Iz) + d(STv, Jv) \right] \\ &+\alpha_3\, d(Iz, Jv) \end{aligned}$$

$d(z, v) \leq (\alpha_1 + \alpha_3)\, d(z, v)$ yielding thereby $z = v$

Finally we need to show that z is also a common fixed point of A, B, S, T, I and J. For this let z be the unique common fixed point of both the pairs (AB, I) and (ST, J). Then

$$Az = A(ABz) = A(BAz) = AB(Az),\ Az = A(lz) = I(Az)$$

$$Bz = B(ABz) = B(A(Bz)) = BA(Bz) = AB(Bz). \quad Bz = B(lz) = I(Bz)$$

which shows that Az and Bz is a common fixed point of (AB, I) yielding thereby $Az = z = Bz = Iz = ABz$ in the view of uniqueness of the common fixed point of the pair (AB, I).

Similarly using the commutatively of $(S, T), (S\ J)$ and (T, J) it can be shown that $Sz = z = Tz = Jz = STz$.

Now we need to show that $Az = Sz\,(Bz = Tz)$ also remains a common fixed point of both the pairs (AB, I) and (ST, J). For this

$$\begin{aligned} d(Az, Sz) &= d\left(A(BAz), S(TSz)\right) \\ &= d\left(AB(Az), ST(Sz)\right) \\ &\leq \alpha_1 \left[\frac{\left[d\left(AB(Az), J(Sz)\right)\right]^n + \left[d\left(ST(Sz), I(Az)\right)\right]^n}{\left[d\left(AB(Az), J(Sz)\right)\right]^{n-1} + \left[d\left(ST(Sz), I(Az)\right)\right]^{n-1}} \right] \end{aligned}$$

$$+\alpha_2\left[d\left(AB\left(Az\right),I\left(Az\right)\right)+d\left(ST\left(Sz\right),J\left(Sz\right)\right)\right]+\alpha_3 d\left(I\left(Az\right),J\left(Sz\right)\right)$$

implies that $d\left(Az,Sz\right)=0$ $\left(\text{as } d\left(AB\left(Az\right),J(Sz\right)+d\left(ST\left(Sz\right),I\left(Az\right)\right)=0\right)$ yielding thereby $Az=Sz$.

Similarly it can be shown that $Bz=Tz$. Thus z is the unique common fixed of A,B,S,T,l and J.

(ii) Suppose that $d\left(ABx,Jy\right)+d\left(STy,lx\right)=0$ implies $d\left(ABx,STy\right)=0$. Then we argue as follows.

Suppose that there exists an n such that $z_n=z_{n+1}$. Then, also $z_{n+1}=z_{n+2}$. Suppose not. Then from (2.3) we have $0<d\left(z_{n+1},z_{n+2}\right)\le kd\left(z_{n+1},z_n\right)$ yielding thereby $z_{n+1}=z_{n+2}$. Thus $z_n=z_{n+k}$ for $k=1,2,\ldots.$ it then follows that there exist two point w_1 and w_2 such that $v_1=ABw_1=Jw_2$ and $v_2=STw_2=lw_1$. Since $d\left(ABw_1,Jw_2\right)+d\left(STw_2,Iw_1\right)=0$ from (2.2) $d\left(ABw_1,STw_2\right)=0$ .i.e. $v_1=ABw_1=STw_2=v_2$. Also note that $Iv_1=I\left(ABw_1\right)=AB\left(Iw_1\right)=ABv_1$. Similarly $STv_2=Jv_2$. Define $y_1=ABv_1$, $y_2=STv_2$. Since $d\left(ABv_1,Jv_2\right)+d\left(STv_2,Iv_1\right)=0$, it follow from (2.2) that $d\left(ABv_1,STv_2\right)=0,$ i.e. $y_1=y_2$. Thus $ABv_1=Iv_1=STv_2=Jv_2$. But $v_1=v_2$. follows AB,I,ST and J have a common coincidence point. Define $w=ABv_1$, it then follows that w is also a common coincidence point of AB,I,ST and J. If $ABw\ne ABv_1=STv_1$, then $d\left(ABw,STv_1\right)>0$. But, since $d\left(ABw,Jv_1\right)+d\left(STv_1,lw\right)=0$, it follows from (2.2) that $d\left(ABw,STv_1\right)=0$, i.e. $ABw=STv_1$, a contradiction. Therefore $ABw=ABv_1=w$ and w is a common fixed point of AB,ST,I and J.

The rest of the proof is identical to the case (1), hence it is omitted. This completes the proof.

Corollary 2.2: Theorem 2.1 remains true if contraction conditions (2.1.1) and (2.1.2) are replaced by any of the following conditions:

(i) $$\text{Either } d\left(ABz,STy\right)\le\alpha_1\left[\frac{\left[d\left(ABx,Jy\right)\right]^n+\left[d\left(STy,Ix\right)\right]^n}{\left[d\left(ABx,Jy\right)\right]^{n-1}+\left[d\left(STy,lx\right)\right]^{n-1}}\right]$$

$$+\alpha_2\left[d\left(ABx,lx\right)+d\left(STy,Jy\right)\right]$$

$$\text{if } d\left(ABx,Jy\right)+d\left(STy,lx\right)\ne 0,\qquad \alpha_1,\alpha_2>0,\ 2\alpha_1+2\alpha_2<1 \text{ or} \tag{A}$$

$$d\left(ABx,STy\right)=0 \text{ if } d\left(ABx,Jy\right)+d\left(STy,lx\right)=0$$

(ii) $$\text{Either } d\left(ABx,STy\right)\le\alpha_1\left[\frac{\left[d\left(ABx,Jy\right)\right]^n+\left[d\left(STy,Ix\right)\right]^n}{\left[d\left(ABx,Jy\right)\right]^{n-1}+\left[d\left(STy,lx\right)\right]^{n-1}}\right]+\alpha_3\left(lx,Jy\right)$$

$$\text{if } d\left(ABx,Jy\right)+d\left(STy,lx\right)\ne 0,\qquad \alpha_1,\alpha_3>0,\ 2\alpha_1+\alpha_3<1 \text{ or} \tag{B}$$

$$d\left(ABx,STy\right)=0 \text{ if } d\left(ABx,Jy\right)+d\left(STy,lx\right)=0$$

(iii) $$\text{Either } d\left(ABx,STy\right)\le\alpha_1\left[\frac{\left[d\left(ABx,Jy\right)\right]^n+\left[d\left(STy,Ix\right)\right]^n}{\left[d\left(ABx,Jy\right)\right]^{n-1}+\left[d\left(STy,lx\right)\right]^{n-1}}\right]$$

$$\text{if } d\left(ABx,Jy\right)+d\left(STy,lx\right)\ne 0,\qquad \alpha_1>0,\ \alpha_1<½ \text{ or} \tag{C}$$

$$d\left(ABx,STy\right)=0 \text{ if } d\left(ABx,Jy\right)+d\left(STy,lx\right)=0$$

(iv) $$d\left(ABx,STy\right)\le\alpha_1\left[d\left(ABx,Jy\right)+d\left(STy,Jy\right)\right]$$

$$+\alpha_2\left[d\left(ABx,lx\right)+d\left(STy,Jy\right)\right]+\alpha_3\, d\left(lx,Jy\right) if\ \ 2\alpha_1+2\alpha_2+\alpha_3<1 \tag{D}$$

(v) $d\left(ABx,STy\right)\le\alpha_1\left[d\left(ABx,Jy\right)+d\left(STy,lx\right)\right] if\ \alpha_1<\dfrac{1}{2}$ (E)

(vi) $d\left(ABx,STy\right)\le\alpha_2\left[d\left(ABx,lx\right)+d\left(STy,Jy\right)\right] if\ \alpha_2<½$ (F)

(vii) $d\left(ABx,STy\right)\le\alpha_3\, d\left(lx,Jy\right)\ if\ \ \alpha_3<1$ (G)

Proof:. Corollaries corresponding to the contraction conditions (A), (B) and (C) can be deduced directly from Theorem 2.1 by choosing $\alpha_3=0,\alpha_2=0$ and $\alpha_2=\alpha_3=0$, respectively. The corollary corresponding the contraction condition (D) also follows from Theorem 2.1 by noting that

$$\frac{\left[d\left(ABx,Jy\right)\right]^n+\left[d\left(STy,lx\right)\right]^n}{\left[d\left(ABx,Jy\right)\right]^{n-1}+\left[d\left(STy,lx\right)\right]^{n-1}}\le\frac{\left[d\left(ABx,Jy\right)+d\left(STy,lx\right)\right]^n}{\left[d\left(ABx,Jy\right)+d\left(STy,lx\right)\right]^{n-1}}$$
$$\le\left[d\left(ABx,Jy\right)+d\left(STy,lx\right)\right]$$

Finally one may note that the contraction conditions (E), (F) and (G) are special cases of the contraction condition (D).

REFERENCES

[1] Fisher, B., Mapping satisfying rational inequality, Nanta. Math. 12 (1979) 195 -199.

[2] Fisher, B., Common fixed point and constant mapping satisfying, a rational inequality, Math. Sem. Notes, 6 (1978) 29 -35.

[3] Jeong, G. S. and. Rhoades, B. E.,Some remark for improving fixed point theorem for more than two maps, Ind. J. Pure Appl. Math., 28 (1997) 1177 - 1196.

[4] Jungck, G., Compatible mappings and Common fixed points, Internat. J. Math. and Math. Sci., 9 (1986) 771 - 779.

[5] Imdad. M and Khan. Q. H., A common fixed point theorem for six mapping satisfying a rational inequality, Ind. Jou. of math. 44 (2002) 47-57.

[6] Sessa, S., A weak commutativity condition of mappings in fixed point considerations, Pub. Inst. Math. (Beogard), 32 (1982) 149-153.

****