

22

ml ;rufz j r; rkdypfs;



, gghl j ; j f; fwgj D}l hf ehq;fs;.....

- ◆ rkd; myyJ rkdypfi s mwpeJ nfhsNthk;
- ◆ $>$, $<$, \geq , \leq Mfpa FwpaLfi sg; gwpp tpsq;f;nfhsNthk;
- ◆ $ax + b \geq c$ " $ax + b \leq c$ vDk; rkdypfi s c UthfFNthk;
- ◆ mrrkdypfspd; j h;Tfi sfi; fhz Nghk;
- ◆ mrrkdypfspd; j h;Tfi s ti uGgLj ;Nthk;
- ◆ mdwhl k; vspe gurpdq;fi sj; j hggj wF rkdypfi sg; gadgLj ;Nthk;

22'1 rkdypfs; (Inequalities)

'XI k; xdwpy; nryyf; \$ba gaz pfspd; vz ;z pfi f 6 my;yJ mj w;F Fi wej thfshf , Uff Ntz Lk;" vd XI k; nrYj ;Jgth; \$wpdhh; gaz pfspd; vz z pfi f x Ma;pd; NkNy j uggL;Lss \$wi w , t;thW fh;l K bAk; $x \leq 6$ MFk;



khz tndhUtd; 100m J}uk; XLtj wF 13 nrffdfs; myyJ mj wF \$ba Neuk; vLf;Fkha;pd>

XI vLf;Fk; Neuj ; j t vdf; nfhz ;hy; $t \geq 13$ MFk; fNo j uggL;Lss x, y Mfpa , U fz paq;fspd; nj hl hGfi s MuhAq;fs;

fz paq;fS fF , i l Na c ss nj hl hG	FwpaLfs; %yk; fh;l ;y;	, twi wf; \$Wk; Ki w
(i) x fz pak; y , wFr; rkd;	$x = y$	x rkd; y
(ii) x fz pak; y l tpi g; nghpJ .	$x > y$	x nghpJ y
(iii) x fz pak; y l tpi r; rmpwJ .	$x < y$	x rmpwJ y
(iv) x fz pak; y , wFr; rkd; myyJ rmpwJ .	$x \leq y$	x rmpwJ myyJ rkd; y
(v) x fz pak; y , wFr; rkd; myyJ nghpJ .	$x \geq y$	x nghpJ myyJ rkd; y

$x < y$, $x > y$, $x \leq y$, $x \geq y$ vDk; nj hl hGfs; rkdypahFk;

$x = y$ rkdhdi t

rkdyp xdWfF Neh; vz i z f; \$! Lj Yk; foj j Yk;

$7 > 5$ $7 + 3 > 5 + 3$ $10 > 8$
--

$7 > 5$ $7 - 3 > 5 - 3$ $4 > 2$

rkdypfF Neh; vz i z f; \$! LkNghJ myyJ fojFkNghJ mrrkdypfspd; FwpaLfs; khwwki lahJ.

rkdypad; , Ugf;fq;fi sAk; Neh; vz z hy; ngUf;fYk> tFj j Yk;

$7 > 5$ $7 \times 3 > 5 \times 3$ $21 > 15$

$7 > 5$ $\frac{7}{3} > \frac{5}{3}$ $2\frac{1}{3} > 1\frac{2}{3}$

rkdypad; , U gf;fq;fi sAk; Nehvz z hy; ngUf;FkNghJ myyJ tFf;FkNghJ rkdypfspd; FwpaLfs; khwwki lahJ.

rkdypfspd; , Ugf;fq;fi sAk; ki wvz z hy; ngUf;fYk; tFj j Yk;

$7 > 5$ $7 \times (-3) < 5 \times (-3)$ $(-21) < (-15)$

$7 > 5$ $\frac{7}{(-3)} < \frac{5}{(-3)}$ $\left(-2\frac{1}{3}\right) < \left(-1\frac{2}{3}\right)$

rkdypad; , Uggf;fq;fi sAk; ki w vz z hy; ngUf;FkNghJ myyJ tFf;FkNghJ rkdypad; FwpaLfs; khwwki lAk;

22'2 rkdypfi sj ; j hj j y;

fDss cj huz qfi s mtj hdpAqfs;

cj huz k;

vddpl k; c ss gz j j pd; %dW kl qFI d; &gh 7 l f; \$! bdhy; nkj j g; gz k; &gh 100 , wFf; Fi wej j hf myyJ rkdhf , Uf;Fk;

- (i) rkdypfi a c Uthf;Fqfs;
- (ii) rkdypfi aj ; j hggj d; %yk; vddpl Kss gz j i j f; Fwrf;Fk; ngWkhd tR ahJ?

(i) $3x + 7 \leq 100$ vdf; fhZ j yk;

(ii) $3x + 7 \leq 100$ l j ; j h j j y; vdgJ x , d; ngWkj pi af; fhz y; vdgj hFk; , rkdjyapd; , UgffqfspiYk; 7 l f; fongNghk;

$$3x \leq 100 - 7$$

$$3x \leq 93$$

, Ugffqfi sAk; 3 My; tFfFKNghJ

$$x \leq \frac{93}{3}$$

$$x \leq 31$$

x , d; j h;T 31 myyJ mj wF; Fi wej ngWkhdkhFk;

vddpl k; c ss gz k; &gh 31 myyJ mj wFf; Fi wej j hFk; rj qfsy; fUj hj NghJ tpi l 31, 30, 29, 28, 27 1 Mfjad KO vz ; ngWkhdkhFk;

c j huz k2

epkYi la tajpd; , U klqFI d; xU tUIj j j f; \$lbdhy; taJ 19 myyJ mi j tpi mj pfkhFk; rkdpi yi a c Uthf;fp mj i dj ; j hggj d; %yk; epkypd; j wNghj ja tai j f; fhZ qfs;

epkypd; j wNghj ja taJ y Mapd;

$$2y + 1 \geq 19 \text{ MFk;}$$

$$2y \leq 19 - 1$$

$$2y \geq 18$$

$$y \geq \frac{18}{2}$$

$$y \geq 9$$

epkypd; j wNghj ja taJ 9 myyJ mj wFf; \$ba ngWkhdkhFk; mtdpd; taJ 9, 10, 11, 12 tUI qfshf , Uff KbAk;



$x < 4$, wfhd j h;T 4 MFkh? fhuz k; j Uf.



(1) ntwvpl q;fi s epugGq;fs;

rkd;py;fs;	nrhw;fs;py;
(i) $x > 7$	x nghpJ tpl
(ii) $t \geq 10$
(iii)	y rmpJ myyJ rkd; 10 l tpl
(iv)	x , d; , Ukl q;FfS l d; 3 l f; \$l;Lk; NghJ 10 l tpl nghj hfNth myyJ rkd;hfNth , Uf;Fk;
(v) $3m - 1 \leq 23$

(2) gpd;tUk; \$wWfi s rkd;py;fs; %yk; fh;lLq;fs;

- (i) Nj q;fha; xdw;pd; Mff; Fi wej tpi y &gh 15 MFk; (Nj q;fha; xdw;pd; tpi yi a &gh x vdf)
- (ii) tFggpy; c ss taJ \$ba khz td;pd; taJ 12 tUl q;fshFk; (q;F khz td;pd; tai j y tUl q;fs; vdf)
- (iii) xU gpUnj rj j py; c ss rdj nj hi fapd; , Ukl q;Fl d; 100 (kdj hfi sr; Nrhj j gpd;dh; Mff;\$ba rdj nj hi f 1000 Ngh; MFk;
- (iv) xU FOt;py; c ss khz thf;sp;l k; 100 &gh Nehl Lf;fs; khj j muk; , Uej d. \$Lj yhd gz k; c ss khz td;pl k; &gh 800 , Uej J.

(3) (i) $x > 5, x$, wfhd ngWkhdq;fs; 5 l vOJ f

(ii) $x \leq 3$, d; j h;Tfs; 3 l vOJ f.

(iii) $l \geq 10$, d; j h;Tj; nj hi l apd; %yf;q;fs; 5 l vOJ f

(4) fbfhllggllss rkdypfspd; jhi t vOJf.

(i) $x - 7 < 4$

(vii) $x + 8 \geq 7x + 14$

(ii) $2x - 8 < 0$

(viii) $-3x - 5 \geq 8x + 15$

(iii) $2x + 1 \leq 7$

(iv) $3x - 5 \geq 10$

(v) $7x - 8 \leq 20$

(vi) $\frac{1}{3}x - 1 \geq 6$



fz gjj py; (i) $x > 0$ vdTk;

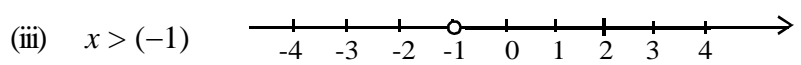
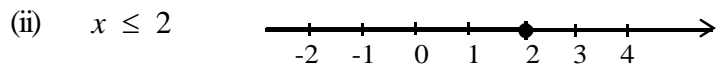
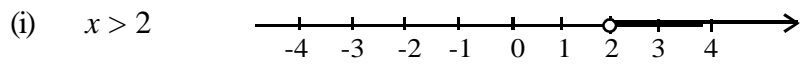
(ii) $x < 0$ vdTk; FwffggLk; vz ; ti ffs; vi t?

22'3 rkdypfspd; jhi t vz ; Nfhl by; Fwj j y;

rkdypfspd; jhi t vz ; Nfhl by; Fwj Jss Ki wi a edF mtjhdAqfs;

c j huz k3

(i) $x > 2$ (ii) $x \leq 2$ (iii) $x > (-1)$ Mfpatwi w vz Nfhl by; FwAqfs;



c j huz k4

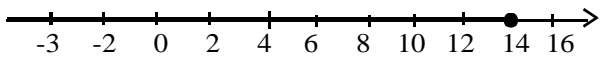
$2x - 7 \leq 21$ vdgj d; jhi t vz Nfhl by; FwAqfs;

$2x - 7 \leq 21$

$2x \leq 21 + 7$

$2x \leq 28$

$x \leq 14$



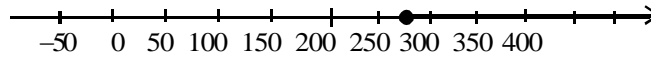
c j huz k5

$$\frac{1}{5}x - 18 \geq 37 \text{ vdgj d; j hi t vz Nfhl by; FwAqfs;}$$

$$\frac{1}{5}x \geq 37 + 18$$

$$x \geq 55 \times 5$$

$$x \geq 275$$



(1) fNo j uggj LSS rkdpyfspd; j hi t vz Nfhl by; Fwj J f; fhl Lqfs;

(i) $x > 0$

(ii) $x - 1 < 0$

(iii) $x - 1 > 2$

(iv) $2x + 3 \geq 5$

(v) $2x - 5 \leq 7$

(vi) $\frac{3x}{4} - 3 \leq 0$

(2) xU tFggpy; c ss khz thfspd; vz z pfi f , Ukl qfhd gpddh; 4 Ngh; tpyfpr; nrdwdh; j wNghJ mqfss khz thfspd; vz z fi f 28 , Yk; mj pfk; MFk; khz tu; vz z pfi f x vdf.

(i) rkdpy xdi w c UthfFf

(ii) mr; rkdypard; j hi tf; fhz f.

(iii) mj j htpi d vz Nfhl bw; Fwj J f; fhl Lf.

(3) xNu ti fahd , U c gfuz qfs> twf Ntz ba tpi yapYk; &gh 400 l f; Fi wjj gpdduk; mtwWfF &gh 3000 myyJ mj wF \$ba gz j i j r; nrYjj Ntz baUfFk;

(i) , i l nts pfi s epugGqfs;

kpd; c gfuz k; xdwpd; tpi y

&gh x Mapd; mi t , uz bdJk; tpi y =

tpi yi af; Fi wjj gpddh; , U kpd;

c gfuz qfS fFk; nrYjj Ntz ba gz k; =

(ii) rkdpyi a vOJ f.

(iii) rkdpyfspd; j hi tf; fhz f.

(4) nj hopYf;Fr; nry;Yk; xUthpd; khj hej Ng&eJf; fl;l z k; , Ukl qfhf mj pfhj j J. gquahz j j pw;fhf khj j muk; &gh 1000 Nkyj pfkhr; nrythfcdwJ. gquahz j j pw;fhf; nrythFk; Mff;\$ba nkj j r; nryT &gh 2200 MFk; vdpd; rkdypa a c Uthf;Fqfs; Mukg khj NgUeJf; fl;l z k; &gh x vdf.

(5) xU mi wdpd; ntggepi y r' ahdJ rkdyp $\frac{1}{2}t + 0.5 \leq 18$ %yk; j uggLfcdwJ.

- (i) rkdypa aj; j lrf;f.
- (ii) mi wdpd; ntggepi yi a vz Nfhl bw; Fwj; Jf; fhl Lqfs;
- (iii) mi wdpd; ntggepi yfF epahakhd , U ngWkhdqfi sj; j Uf.
- (iv) ebqfs; Fwggpl l ngWkhdqfs; epahakhdnj df; Fwggpl f; fhuz k; vdd?

(6) $5x - 3 \leq 6x - 2 \leq 5x + 2$, j i dj; j lrf;f. j lri t vz Nfhl by; fhl Lf.

rhukrk;

- ★ $x \geq 5$ vdgi j x nghpJ myyJ rkd; 5 vdW \$wKbAk;
- ★ rkdypnahdwd; , Ugf;fKk; xNu vz j z f; \$l bdhYk> fojj hYk; mj py; fhz ggLk; rkdypapd; FwpaL khwhJ.
- ★ rkdypnahdwd; , U gf;fKk; xNu Neh; vz z hy; ngUf;fcdhYk> tFjj hYk; mj py; fhz ggLk; rkdypapd; FwpaL khwhJ.
- ★ rkdypnahdwd; , U gf;fKk; xNu ki w vz z hy; ngUf;fcdhYk; tFjj hYk; mj py; fhz ggLk; rkdypapd; FwpaL khwwki lAk;
- ★ $> myyJ < vDk$; FwpaLi sf; nfhz l rkdypifi sf; fhl LkNghJ ti uaggLk; Gssp (tl;l k) epwwggLtj pyi y.
- ★ $\geq myyJ \leq vDk$; FwpaLfi sf; nfhz l rkdypa a vz Nfhl by; Fwj; Jf; fhl LkNghJ ti uaggLk; Gssp (tl;l k) epwwggL Ntz lK;
- ★ mdwhl gurrpi dS fF epahakhd j hri t rkdypfspd; %ykhfg; ngwWfnfhss KbAk;