ზ. კვინიკაძე

მეთოდური მითითება გეომეტრიული ფიგურების აგებისათვის, კომპიუტერული პროგრამა Auto CAD 2008-ის გამოყენებით

(II რეიტინგული წერა)

„ტექნიკური უნივერსიტეტი"

საქართველოს ტექნიკური უნივერსიტეტი

წინამდებარე მეთოდური მითითება განკუთვნილია საქართველოს ტექნიკური უნივერსიტეტის სატრანსპორტო და მანქანათმშენებლობის, ენერგეტიკისა და ტელეკომუნიკაციების ფაკულტეტების სტუდენტებისათვის. მასში გადმოცემული მასალა შეესაბამება აღნიშნული ფაკულტეტების საინჟინრო კომპიუტერული გრაფიკის კურსით გათვალისწინებული II რეიტინგული სამუშაოს მიზნობრივ დანიშნულებას და შინაარსს.

რეცენზენტი სრული პროფესორი თ. ბახტაძე

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Verba volant,
scripta manent

ყველა უფლება დაცულია. ამ წიგნის არც ერთი ნაწილი (იქნება ეს ტექსტი, ფოტო, ილუსტრაცია თუ სხვა) არანაირი ფორმით და საშუალებით (იქნება ეს ელექტრონული თუ მექანიკური), არ შეიძლება გამოყენებულ იქნას გამომცემლის წერილობითი ნებართვის გარეშე.

საავტორო უფლებების დარღვევა ისჯება კანონით.

S e s a v a l i

ukanasknel wlebSi saqarTvelos teqnikur universitetSi xorcielde-ba teqnikuri disciplinebis swavlebaSi kompiuteris danergvisa da gamoye-nebis farTo programa.

am mizniT sainJinro grafikisa da teqnikuri meqanikis departamentis, sainJinro grafikis mimarTulebaze, satransporto da manqanaTmSeneblobis, energetikisa da telekomunikaciebis fakultetebis studentebisaTvis Seiq-mna sainJinro grafikis kursis axali samuSao programa (Semdgeneli a.Savgu-liZe, z.kvinikaZe, i.bacikaZe), romelic am sagnis swavlebas iTvaliswinebs swavlis I kursis II semestrSi.

programis umTavresi siaxle isaa, rom sainJinro grafikis kursi Seis-wavleba da II reitinguli samuSao sruldeba kompiuteruli programa Auto CAD 2008 – is gamoyenebiT.

es meToduri miTiTebebi gankuTvnilia satransporto da manqanaT-mSeneblobis, energetikisa da telekomunikaciebis fakultetis studentebis mosamzadeblad II reitinguli werisaTvis.

II reitinguli wera

1. samuSaos Tema

geometriuli figuris mocemuli ori xediT mesame xedis ageba, kompiu-teruli programa Auto CAD 2008–is gamoyenebiT.

2. samuSaos mizani

reitinguli weris mizania gamoavlinos studentis momzadeba kompiu-teruli programa Auto CAD 2008–is gamoyenebiT geometriuli figurebis age-basTan dakavSirebuli sakiTxebis codnaSi.

3. samuSaos Sinaarsi da gaformeba

II reitinguli samuSao iTvaliswinebs kompiuteris saSualebiT geomet-riuli figurebis xedebis agebas, maT failSi Senaxvas da naxazis myari aslis miRebas.

4. samuSaos amocanis Sinaarsi

mocemulia geometriuli figuris ori xedi.

avagoT misi mesame xedi da naxazi gavaformoT standartebis mixedviT, kompiuteris gamoyenebiT.

5. II reitinguli samuSaos Sesrulebas rekomendebulia win uZRodes Sesabamisi Teoriuli da praqtikuli masalis damuSaveba sagnis qvemoT mocemuli saxelmZRvaneloebidan:

1. a. SavguliZe, i. xatiskaci, n. nikvaSvili, z. kvinikaZe. sainJinro da kompiuteruli grafika (I nawili). `teqnikuri universiteti~, Tbilisi, 2009;

2. z. kvinikaZe. sainJinro da kompiuteruli grafika (II nawili). `teq-nikuri universiteti~, Tbilisi, 2010;

3. Вернер Зоммер. Auto CAD 2008. Руководство конструктора. Издательство БИНОМ, Москва, 2008;

4.Виктор Погорелов.AutoCAD 2005 для начинающих. Санкт-Петербург ≪БХВ-Петер-бург≫. 2004;

5.i. bacikaZe, z. kvinikaZe, m. arabiZe. sainJinro grafika (gegmiluri xaz-va). `teqnikuri universiteti~, Tbilisi, 2009;

6. a. beJaniSvili, z. kvinikaZe, l. danelia. amocanaTa krebuli gegmi-lur xazvaSi (II nawili). `teqnikuri universiteti~, Tbilisi, 2008.

naxazis Seqmna

nebismieri naxazis Seqmna SesaZlebelia daviwyoT sul Tavidan, rog-orc es ganxilulia saxelmZRvaneloSi (z. kvinikaZe. sainJinro da kompiute-ruli grafika (II nawili). `teqnikuri universiteti~, Tbilisi, 2010), magram, radgan programa AutoCAD 2008–Si Senaxulia ukve Seqmnili naxazebi, SegviZ-lia gamoviZaxoT Cveni Seqmnili, Senaxuli furclebidan erT-erT an AutoCAD 2008–Si Cawerili sxva nebismieri Sabloni.

ekranze sawyisi dialoguri fanjara Tu ar Cans, igi unda gamoviZa-xoT. amisaTvis saWiroa brZanebis striqonSi SevitanoT `Startup 1~ da dava-WiroT Enter klaviSs. amis Semdeg Auto CAD 2008 programis gaxsnisas ekranze yovelTvis gamoCndeba sawyisi dialoguri fanjara.

standartul panelze mausi davawkapunoT New (axali) Rilakze. gamoCn-deba dialoguri fanjara Creat new drawing, aq unda avirCioT Use a template Rilaki, davawkapunoT Browse Rilakze, gamoCndeba select a tamplate file (Sablonis failis arCeva) fanjara sadac @look in siaSi movZebnoT A3 dwt. faili da Open Rilakze daWeriT ekranze gamoCndeba A3 dwt Sablonis axali naxazi, romlis saxeli iqneba drawing dwg. es yvelaferi maSin, Tu naxazi Senaxuli gvaqvs. am SemTxvevaSi `naxazSi~ igulisxmeba, rom samuSao magida gawyobilia da furcelze Seqmnilia naxazis CarCo da ZiriTadi warwera. ([2]. Tavi II, 2.1, 2.2, 2.3. Tavi VI 6.5 savarjiSo).

mivaniWoT am naxazs raime saxeli, magaliTad `figura~.

naxazis Seqmna SesaZlebelia sxva gziTac:

1. File – New – Create New drawing – Use a wizard am fanjris Select a wizard siaSi virCevT Quick setap (swrafi momzadeba) + Ok;

2. Quick setap fanjaraSi sigrZis erTeulad virCevT Decimal + Next, xazvis sazRvrebs ganvsazRvravT Area zonaSi + Finish.

Format – units – drawing units – Length – type – decimal

Format – drawing limits da brZanebis striqonSi Segvyavs xazvis sazRvrebis zomebi;

3. mdgomareobis striqonSi unda CairTos Grid (bade) Rilaki an klavia-turaze Rilaki F7;

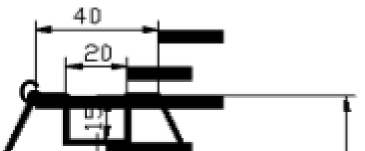
4. avsaxoT naxazis mTeli are ekranze. view – zoom – All;

5. davayenoT bmis biji. tools – drafting setting – snap and grid ([2] Tavi II, 2.3);

6. CavsvaT naxazi CvenTvis saWiro formatis CarCoSi. Casma xorciel-deba Insert brZanebiT. ([2] Tavi VIII, 8.3).

detalis xedebis ageba

vTqvaT, mocemulia geometriuli figuris ori xedi (winxedi, zedxedi) (nax. 1).

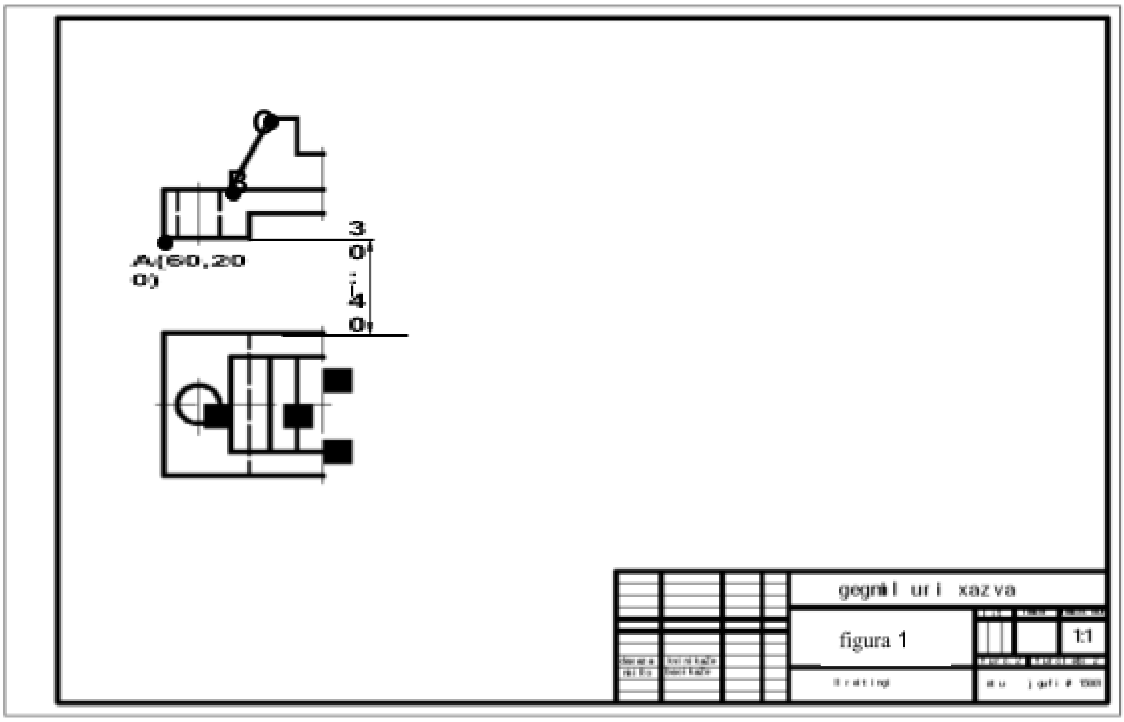


mocemuli ori xedis asagebad Cava-taroT amocanis mcire analizi. rogorc vxedavT figura simetriulia, amitom win-xedisa da zedxedis agebisaTvis SeiZle-ba avagoT orive xedis marcxena an mar-jvena naxevrebi (nax. 2), Semdeg ki Modify – Mirror brZanebiT ([2] Tavi VI 6.10) maTi sa-rkisebri gamosaxuleba avagoT (nax. 3).

me-2 naxazze naCvenebi gamosaxule-bis misaRebad saWiroa gamoviyenoT obieq-turi bmebi da obieqturi midevneba ([2] Tavi V; Tavi VI, 6.2). xedebis agebas SevudgeT Semdegi TanamimdevrobiT:

1. Tools – Drafting settings fanjaraSi CavrToT Endpoint, Midpoint, Interssection, perpendicular, Paralel reJimebi;

2. mdgomareobis striqonSi CavrToT reJimi: Ortho; Osnap, Otrack;



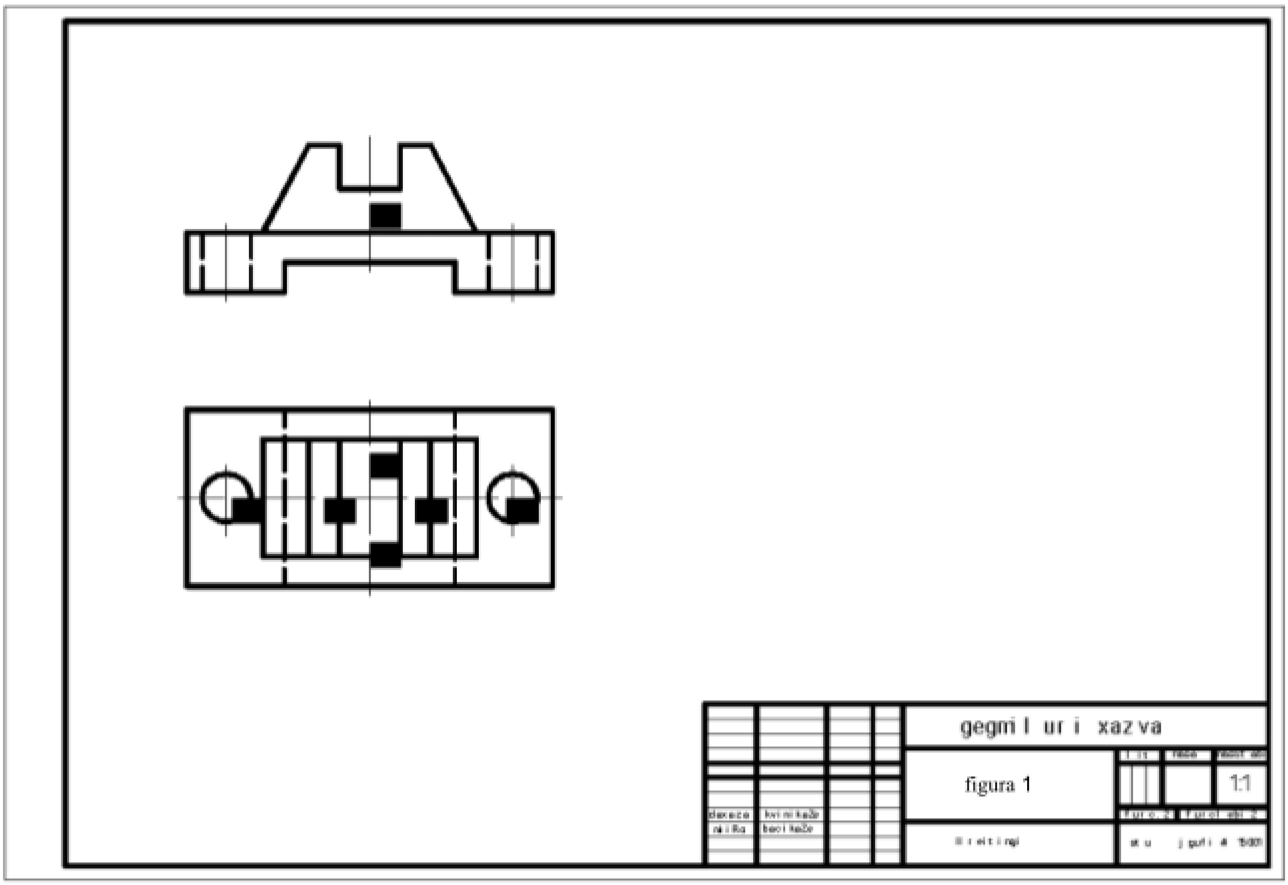
nax. 2

3. mimarTuleba/sigrZe meTodiT (kursori unda gadavaadgiloT im mi-marTulebiT saiTac unda gadaizomos monakveTi da klaviaturiT monakveTis sidide SevitanoT). avagoT detalis xedebi (winxedi, zedxedi). gamoviZaxoT Line brZaneba.

brZanebis striqonSi gaCndeba kiTxva pirveli wertilis Sesa-xeb. klaviaturis saSualebiT, rogorc mocemulobidan Cans mivuTiToT saw-yisi A (60, 200) wertili.

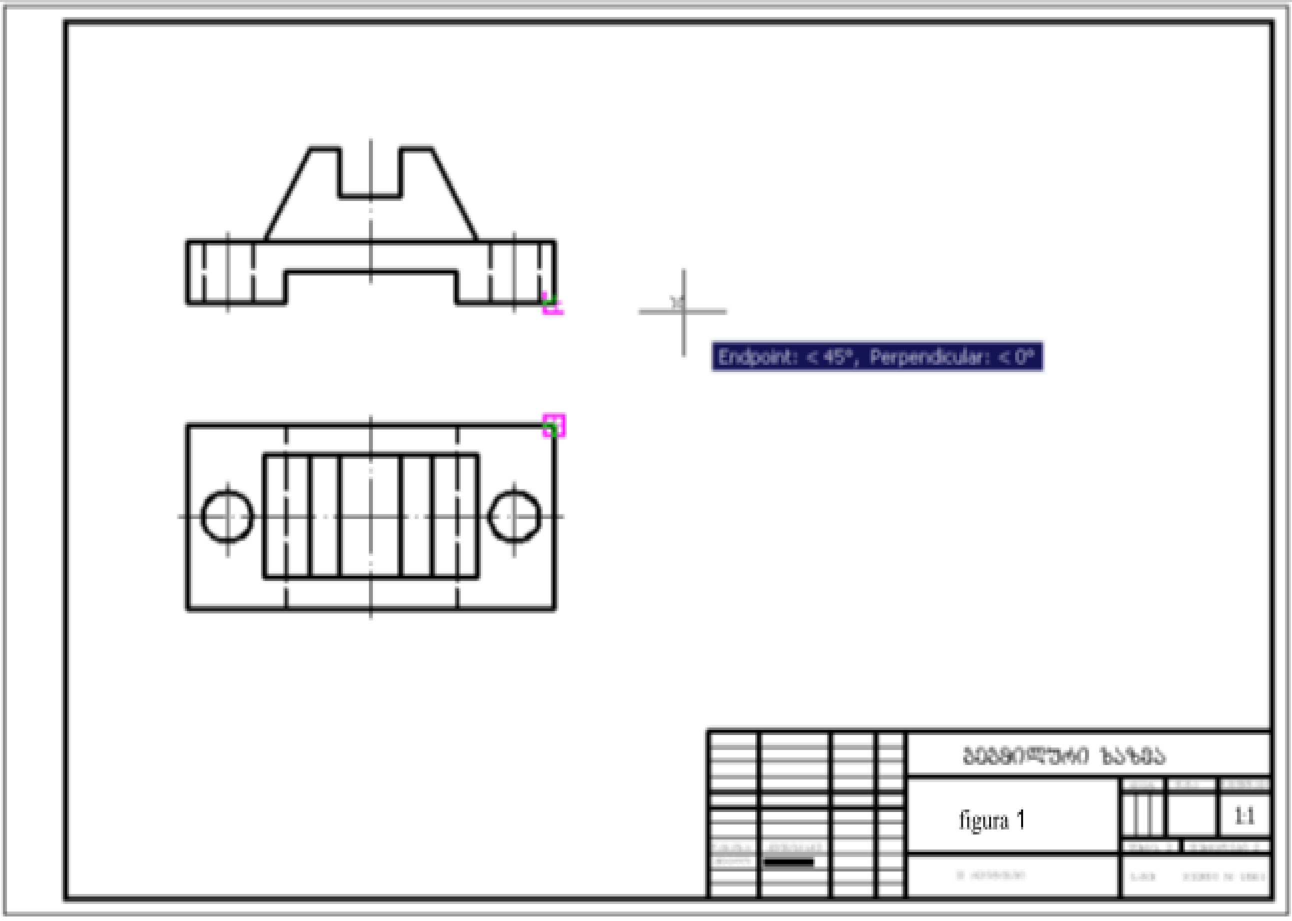
B wertilis misaRebad SegviZlia gamoviyenoT From brZaneba ([2] Tavi V, 5.1.4). sadac sabazo wertilad A wertili miviRoT. amitom B wertilis fardobiTi koordinatebi A wertilis mimarT iqneba @ 25, 20; C wertili avagoT fardobiTi (@15,30) koordinatebiT B wertilis mimarT.

xedebs Soris manZili aviRoT 30 ÷ 40 erTeuli da avagoT zedxedis marcxena simetriuli nawili (nax. 3).

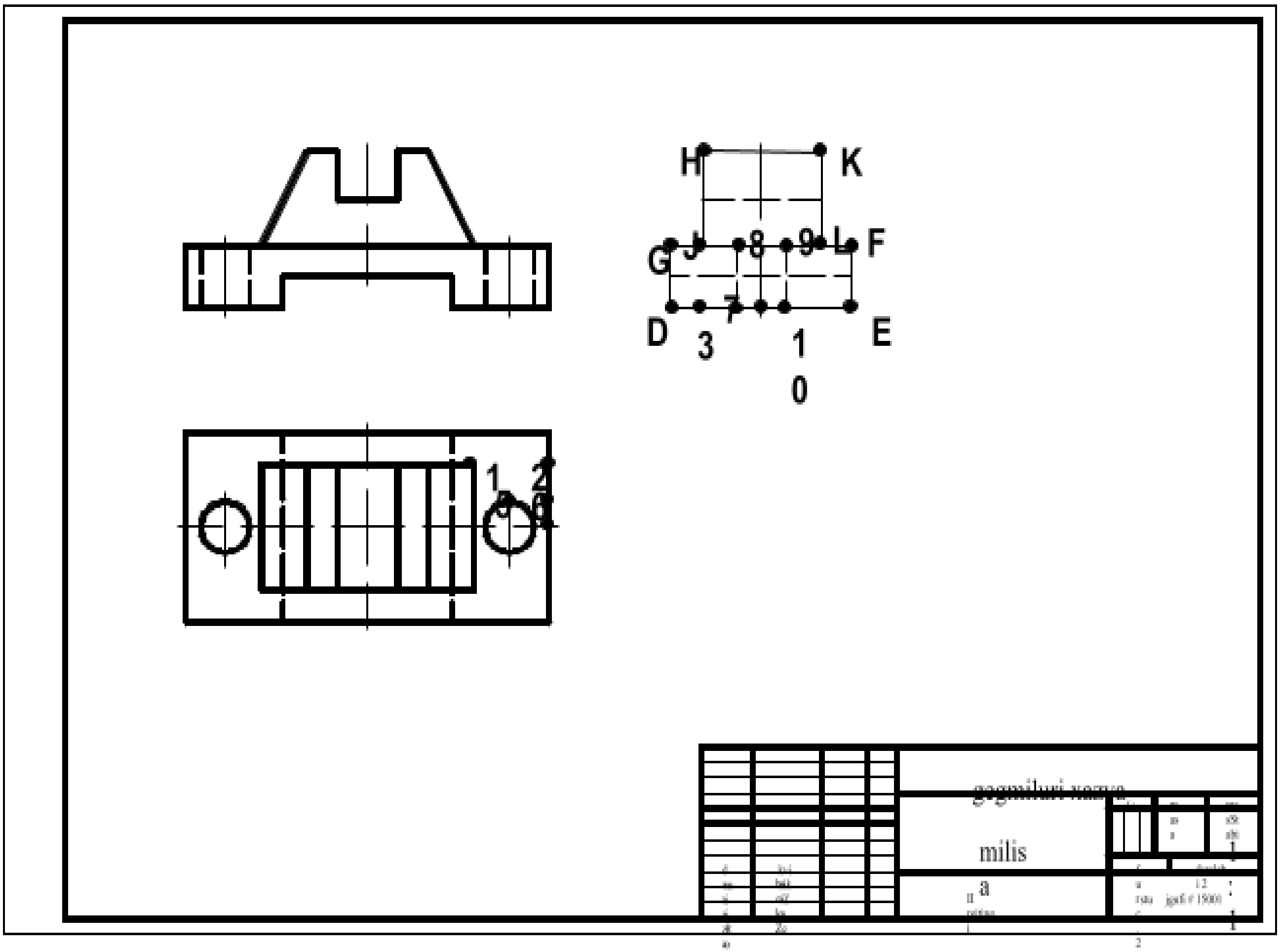


nax. 3

mocemulobis (ori xedi) agebis Semdeg SevudgeT mesame (gverdxedi) xe-dis agebas. amisaTvis saWiroa mdgomareobis striqonSi Ortho reJimis nac-vlad CavrToT Polar reJimi da Drafting settings – Polar Tracking fanjaraSi Increment angle areSi SeviyvanoT 45^0. mesame xedis sawyisi D wertilis asagebad viyenebT
obieqtur midevnebas da obieqtur bmebs (nax. 4). amis Semdeg DEFG - marTku-


Endpoint: < 45°, Perpendicular: < 0°
figura 1
1:1

nax. 4


H
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nax. 5

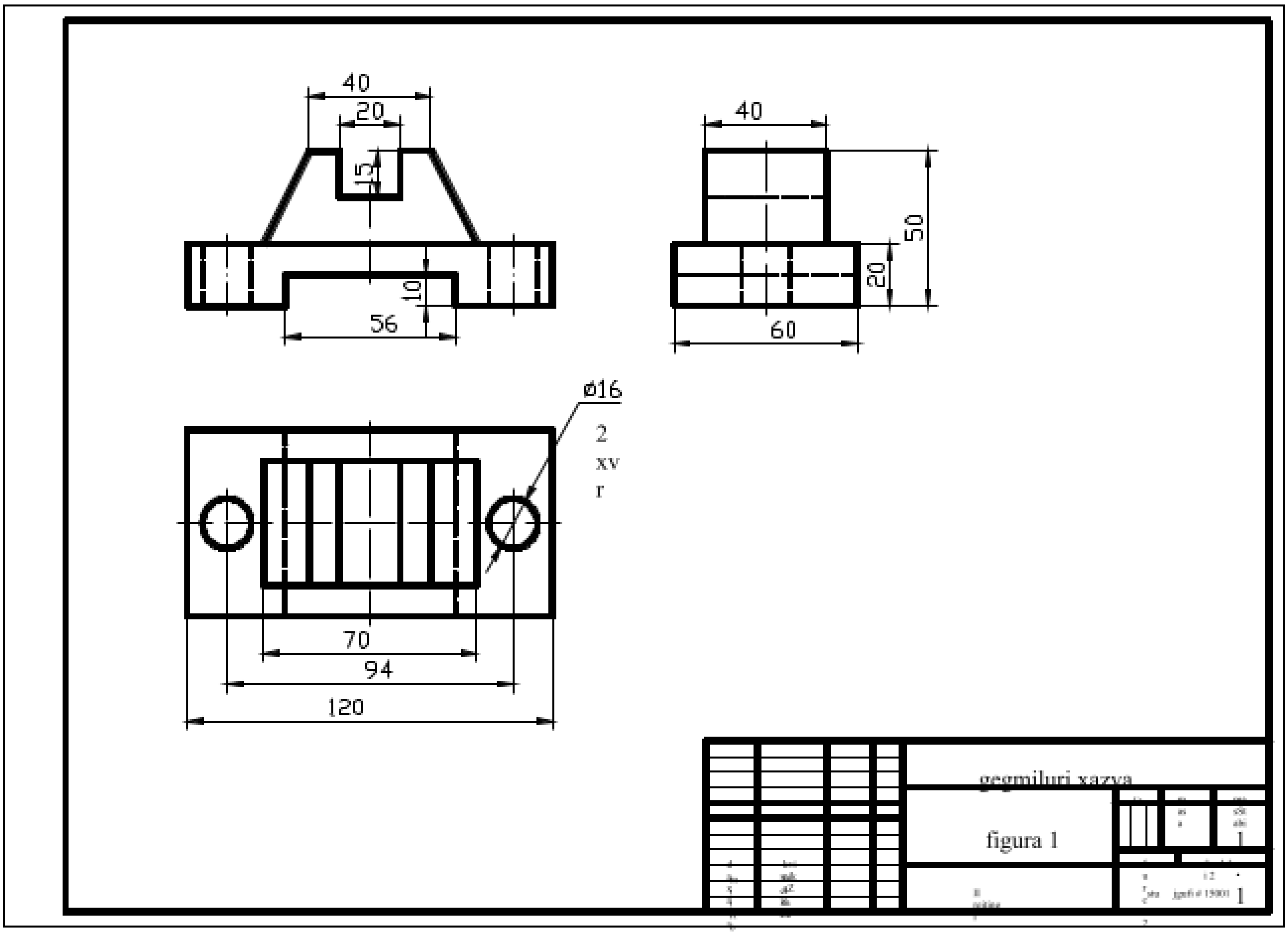
Txedis ageba siZneles ar warmoadgens (nax.5). JHKL marTkuTxedis asagebad viye-nebT obieqturi midevnebis droebiT wertilebs.

obieqturi midevnebis droebiTi werilebis reJimis CasarTavad viyenebT Object snap panelis Temporary tracking point (midevnebis wertili) Rilaks an obieqturi bmis konteqsturi menius Temporary tracking point striqons.

Line brZanebis gamoZaxebis Semdeg SekiTxvaze pirveli wertili, rogorc aRvniSneT unda davawkapunoT droebiTi wertilebis misaTiTebl Temporary tracking pointRilakze. Semdegi kiTxva, romelic midevnebis konkretu-

```
Command:
Command: _line Specify first point: tt
Specify temporary OTRACK point:
```

li wertilis Seyvanas moiTxovs unda mivuTiToT 1 wertili, obieqturi midevnebis saSualebiT davafiqsiroT meore droebiTi 2 wertili, obieqturi midevnebis saSualebiT 3 wertili unda davafiqsiroT maSin, rodesac gamoC-ndeba obieqturi midevnebis 45^0-iT daxrili xazi da DE monakveTis kveTa. J, H, K da L wertilebis dafiqsireba sirTules aRar warmoadgens.

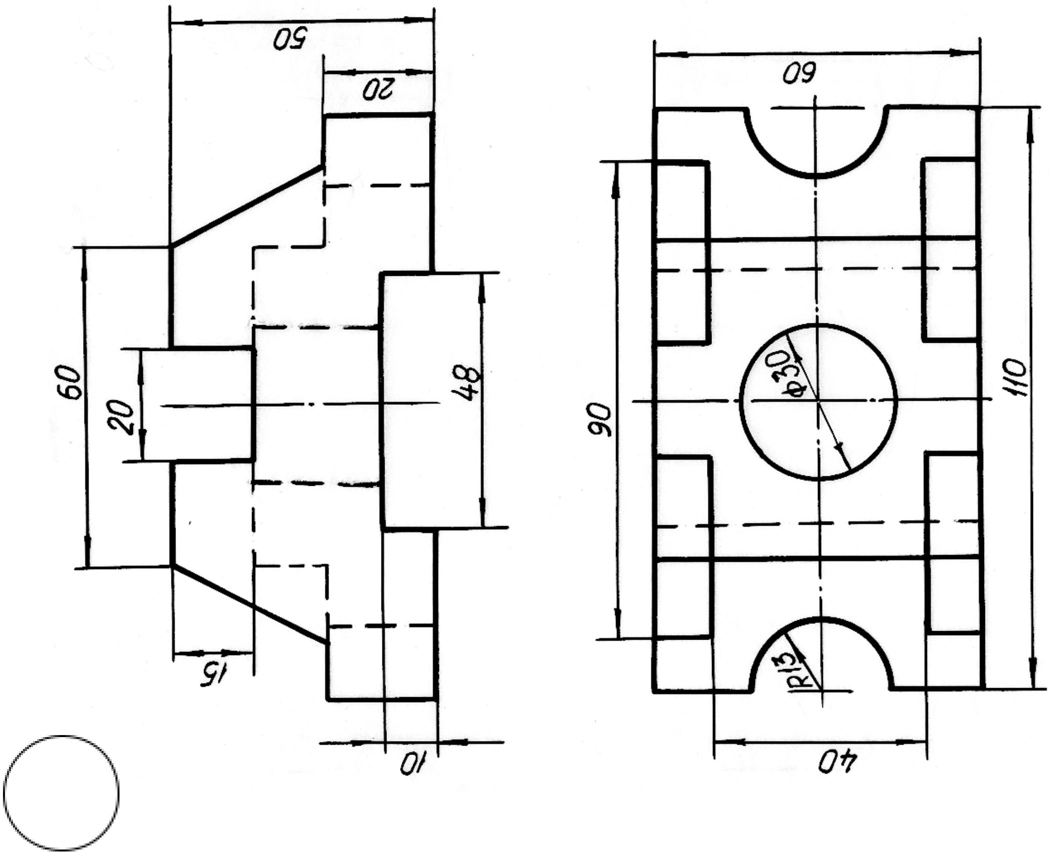


nax. 6

detalis xedebis agebis damTavrebis Semdeg gavataroT yvela simet-riis RerZis xazi. rogorc viciT standartiT RerZis xazebi konturidan ga-dacilebuli unda iyos 2÷3 erTeuliT, es ki unda Sesruldes Modify – Length-en brZanebiT ([2] Tavi VI 6.12). amis Semdeg saWiroa naxazis gaformeba – zome-bis dasma, rac ganxilulia saxelmZRvaneloSi ([2] Tavi VII 7.3).

sabolood unda miviRoT gamosaxuleba, romelic naCvenebia me-6 naxaz ze.

savarjiSo magaliTebi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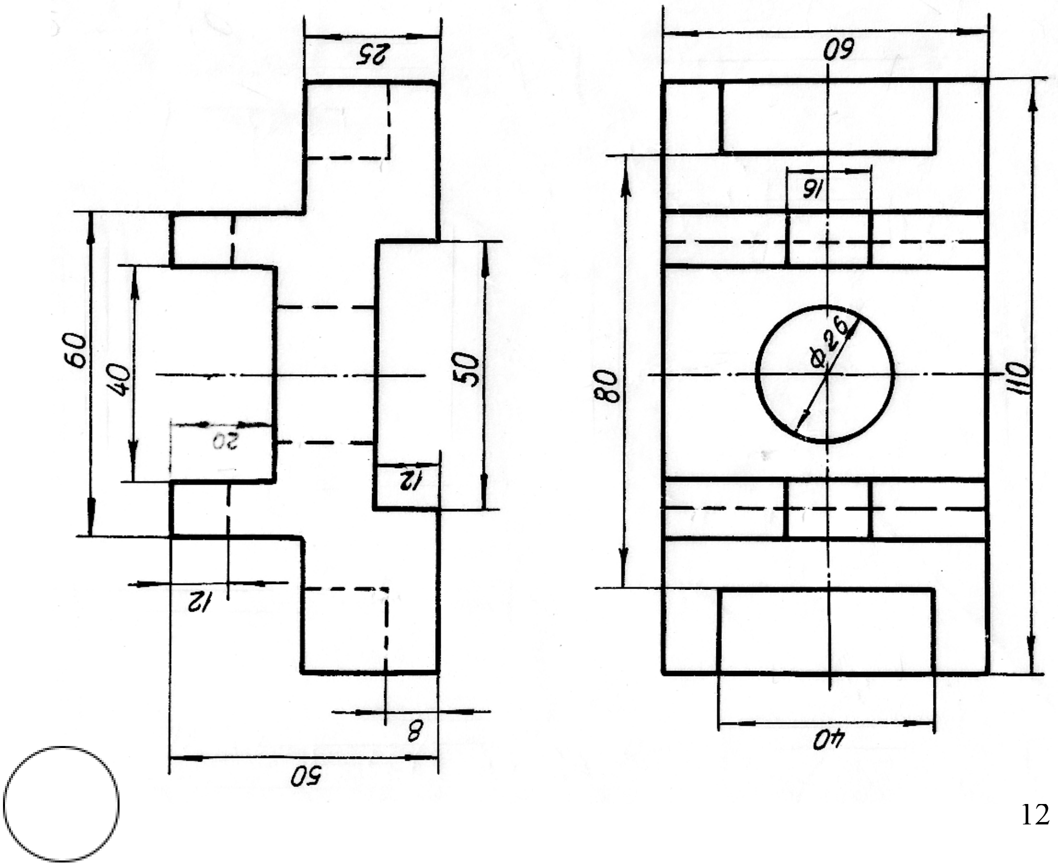
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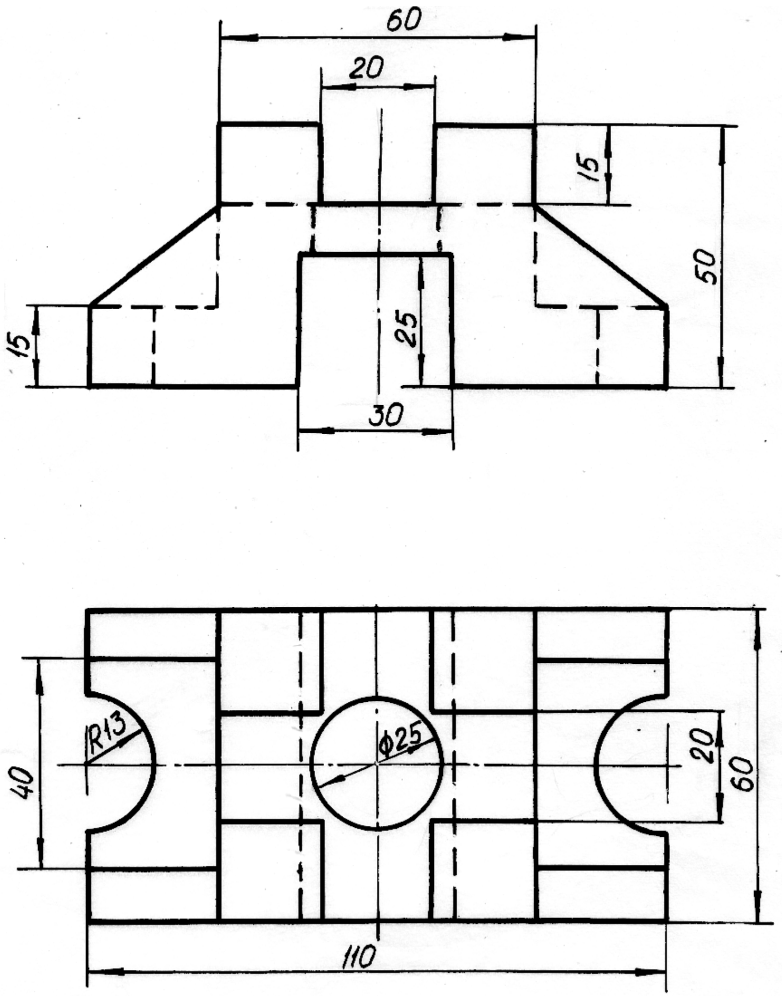
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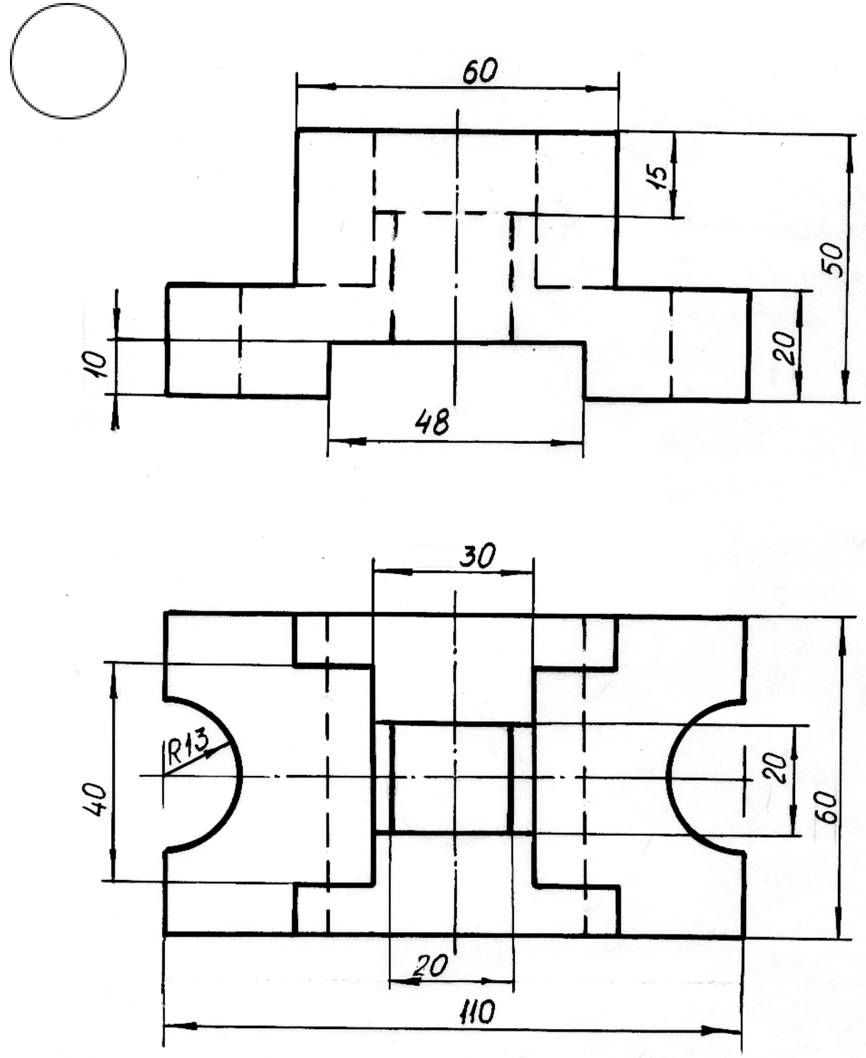
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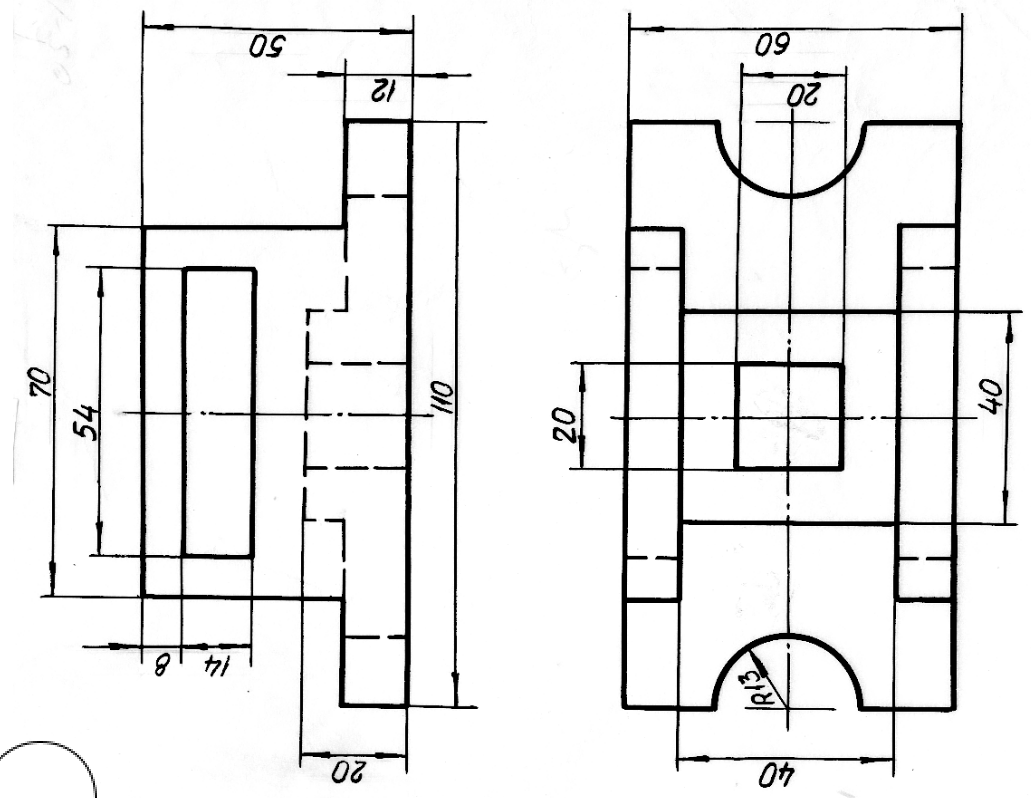
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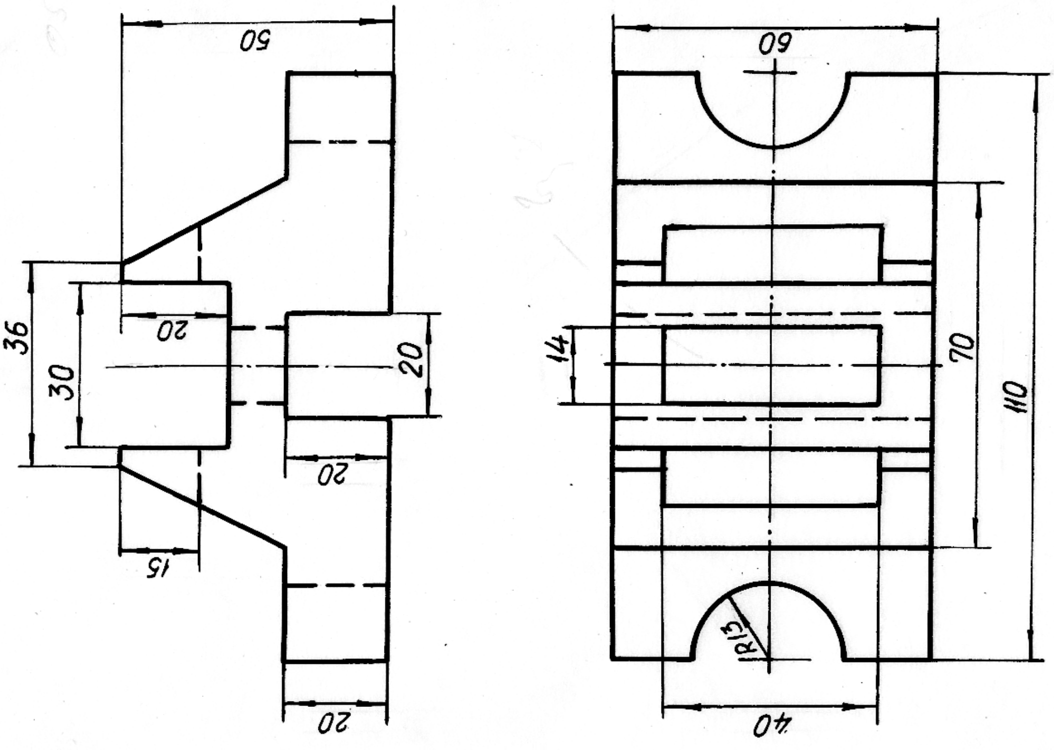
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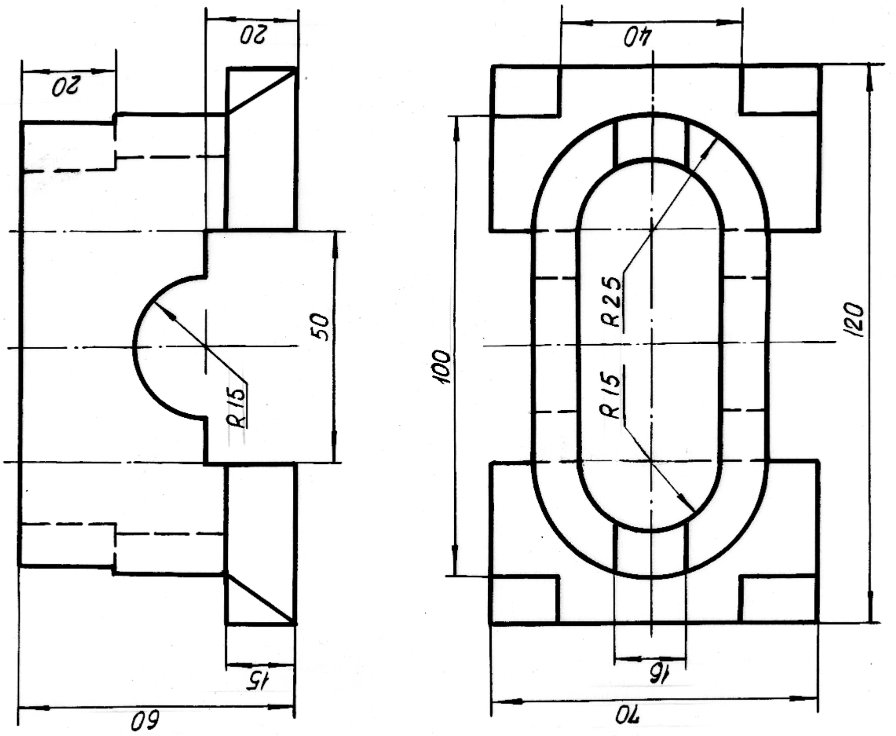
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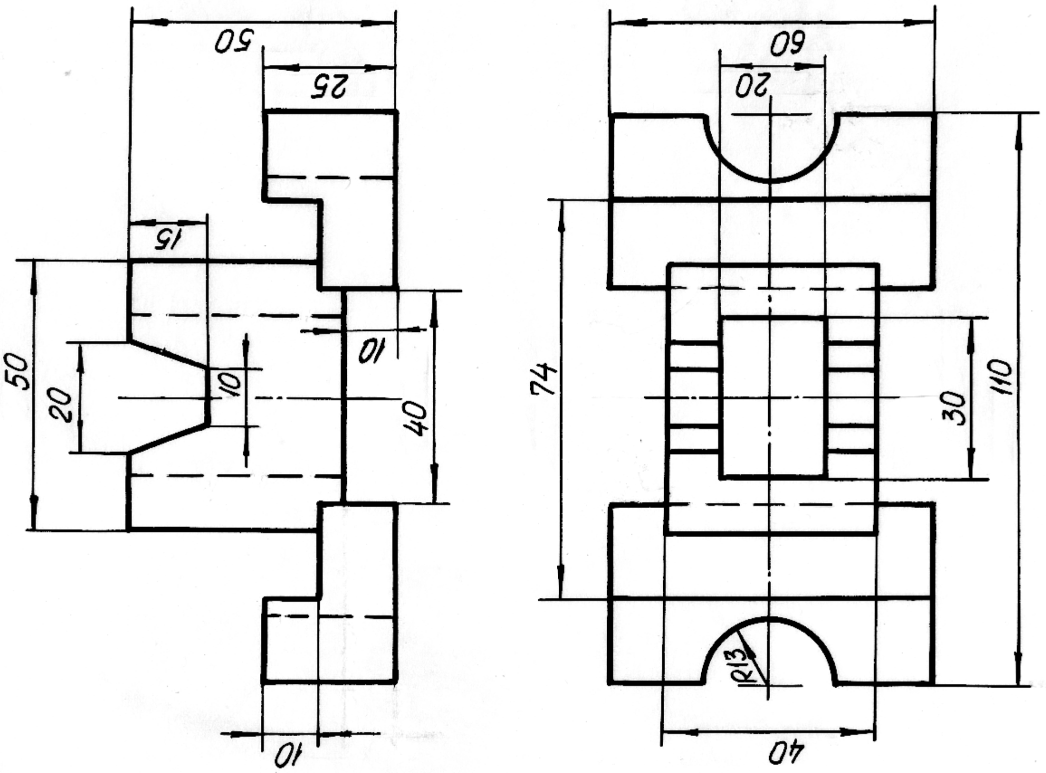
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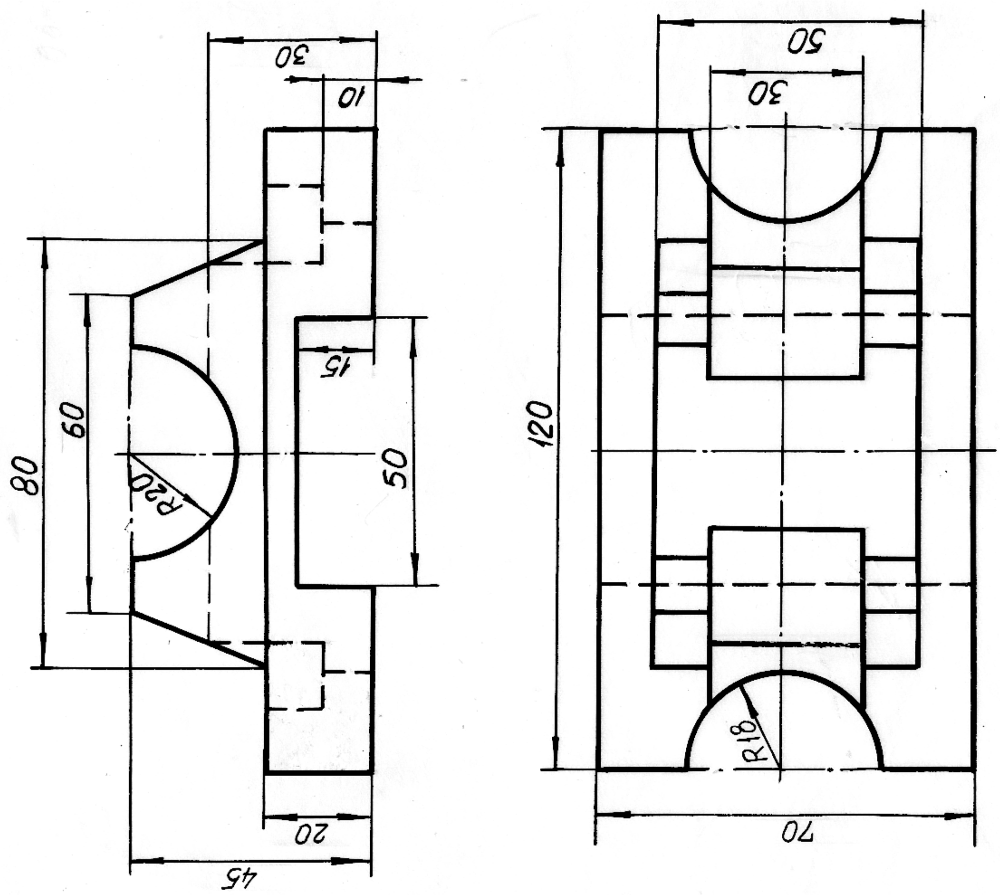
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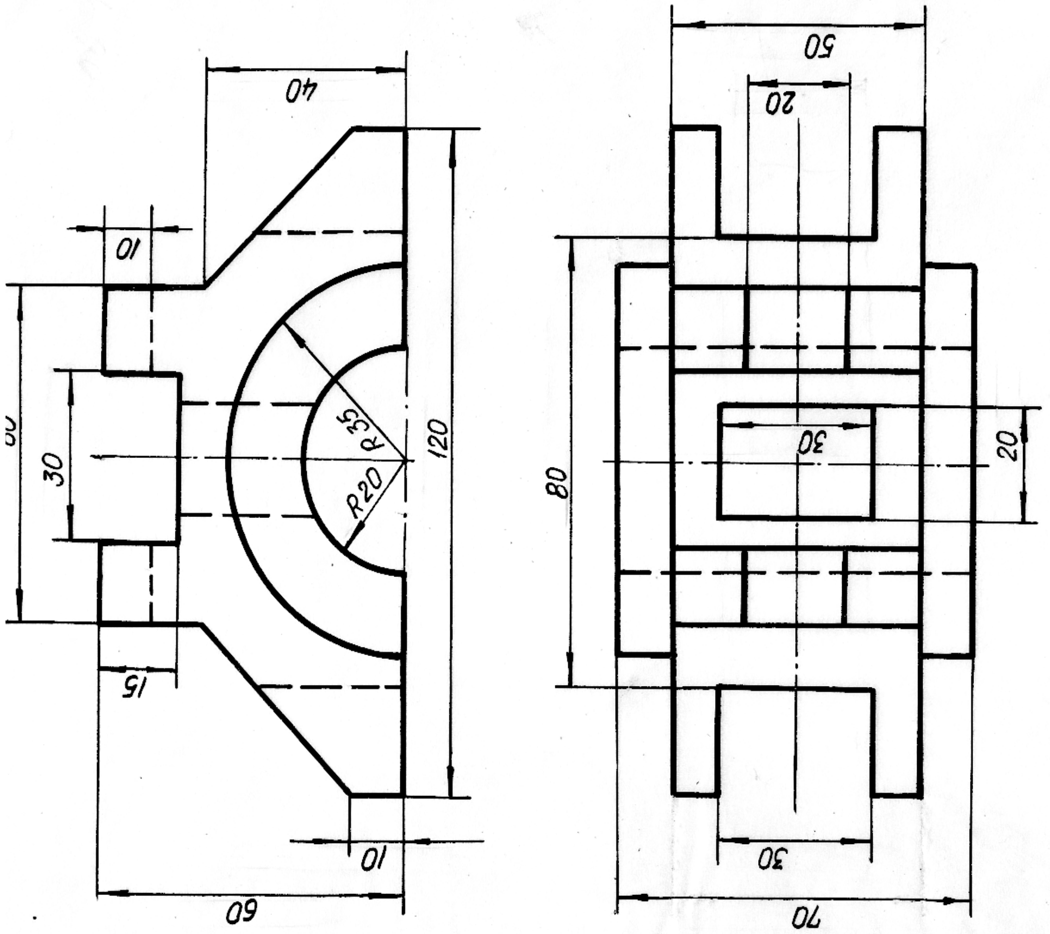
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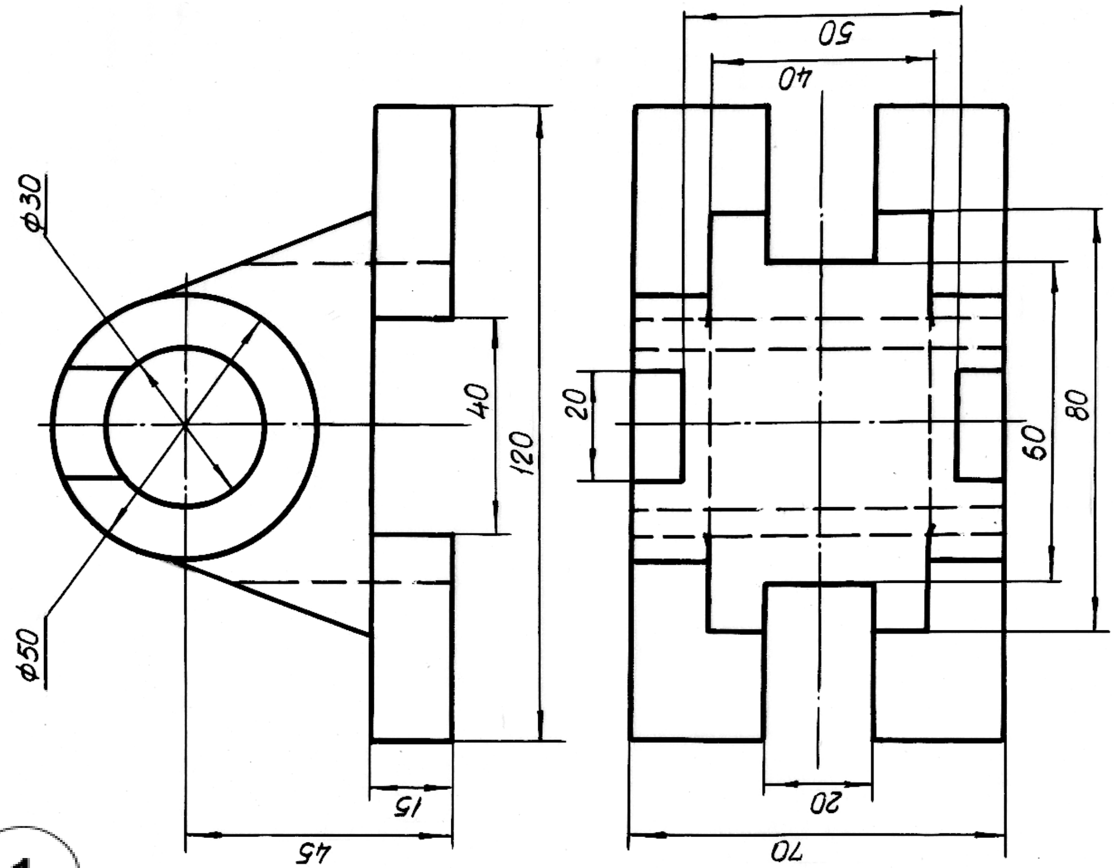
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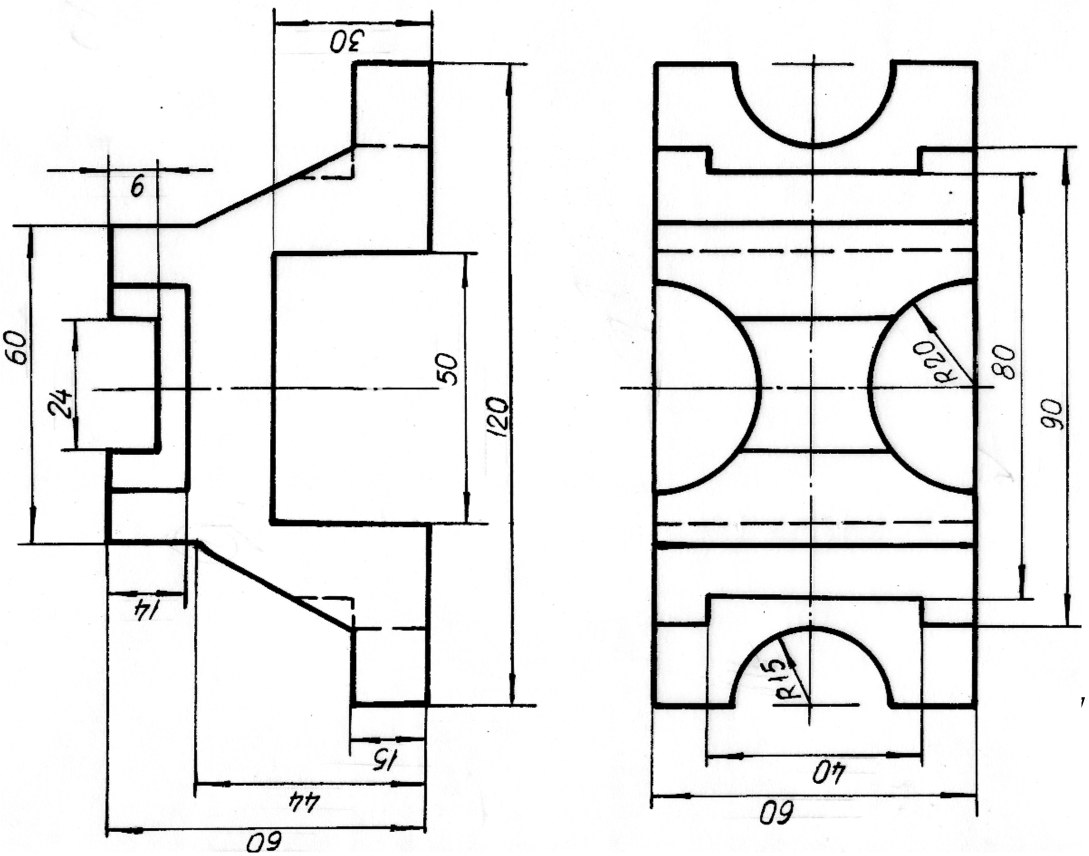
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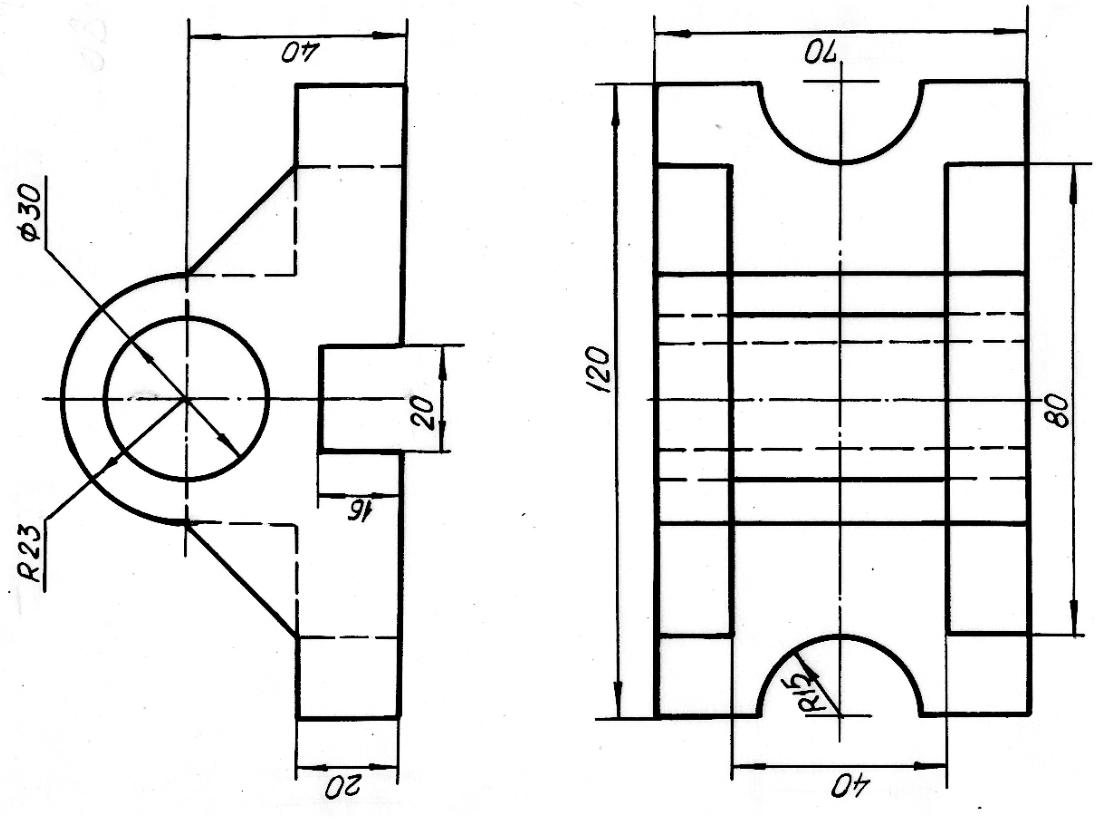

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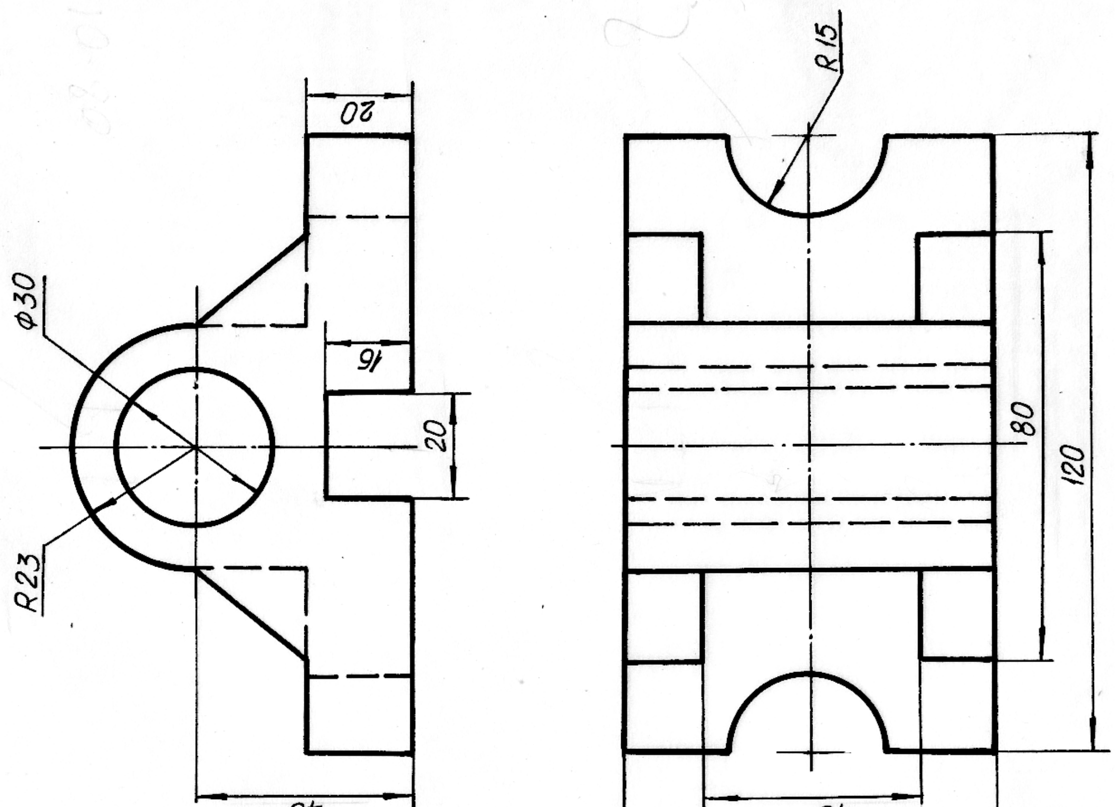

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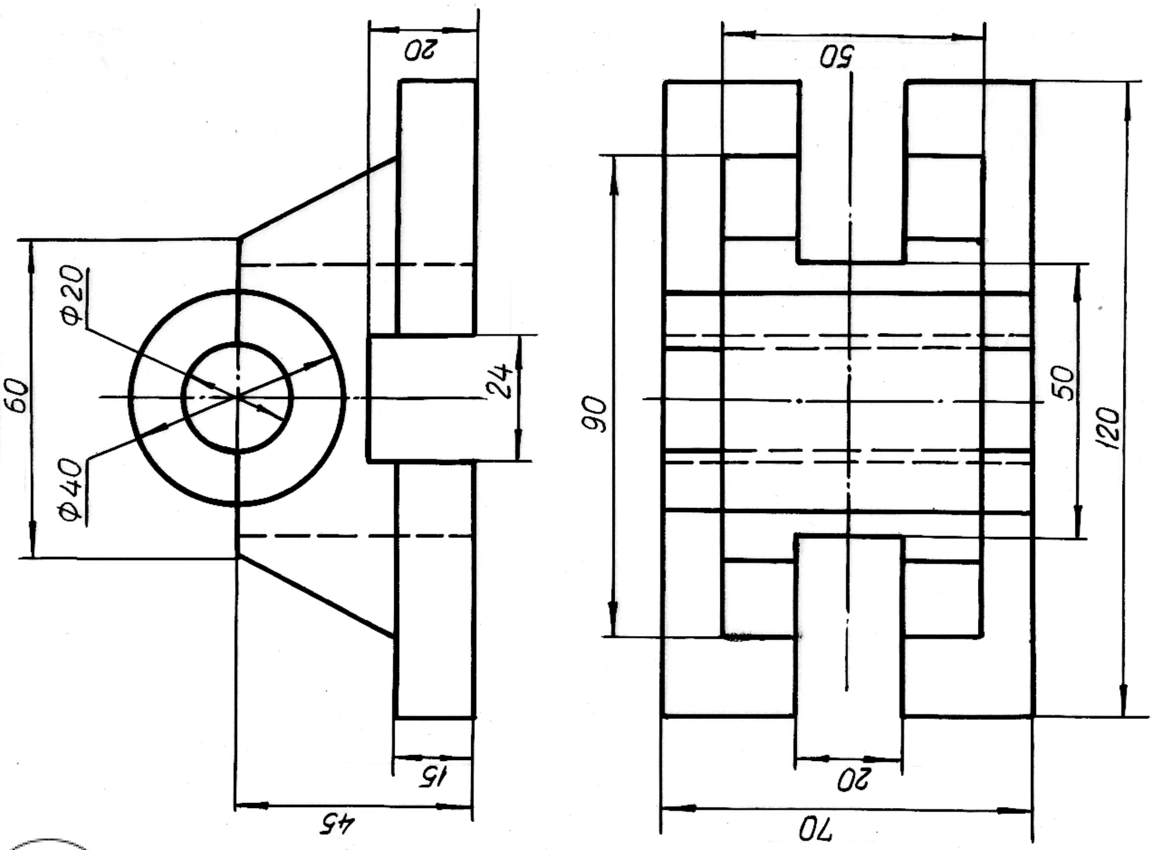
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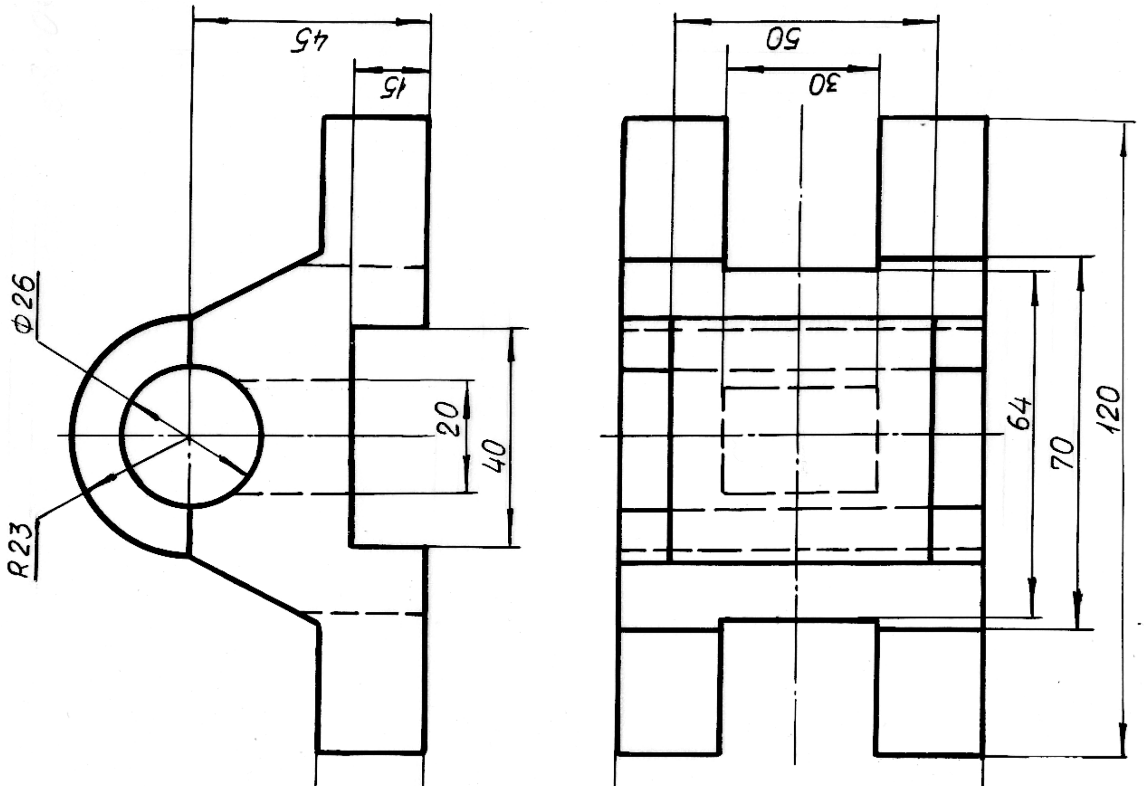
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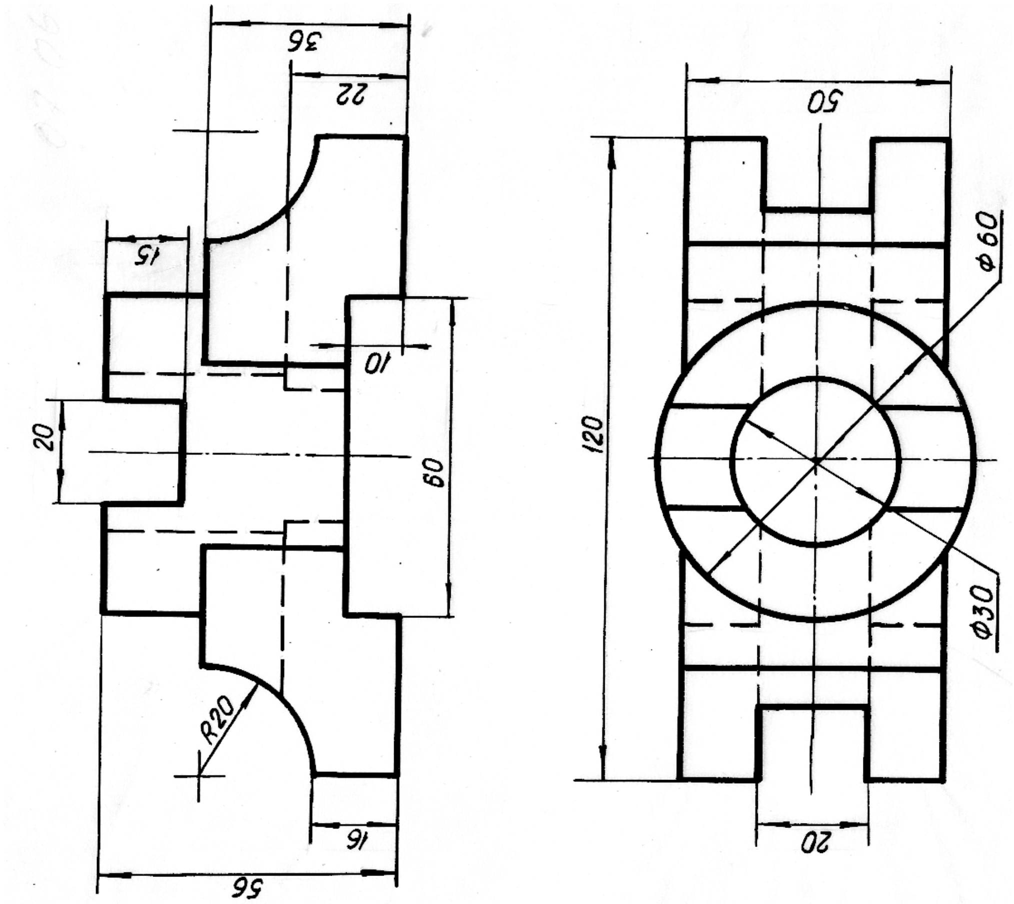
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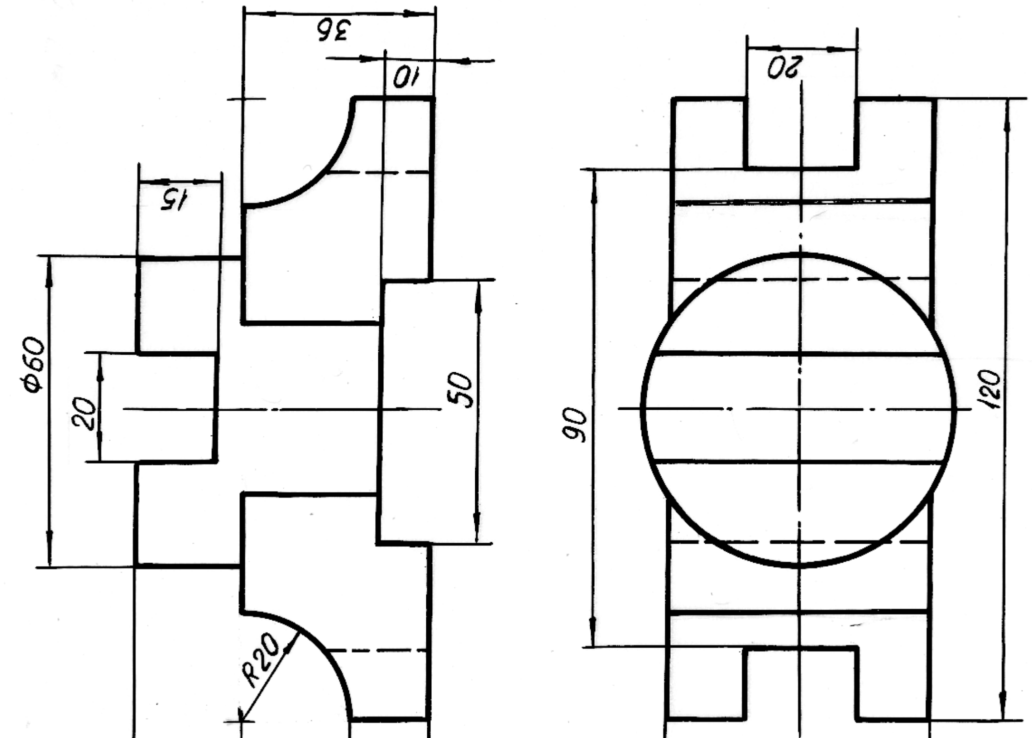
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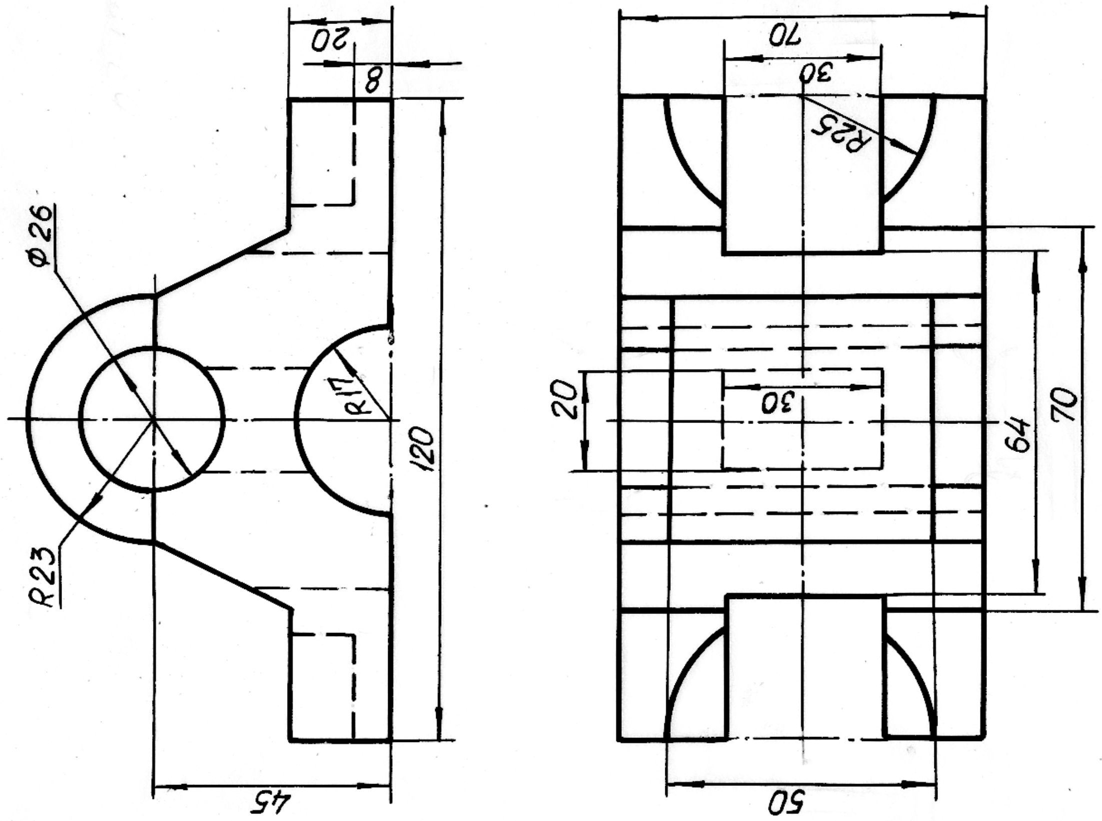

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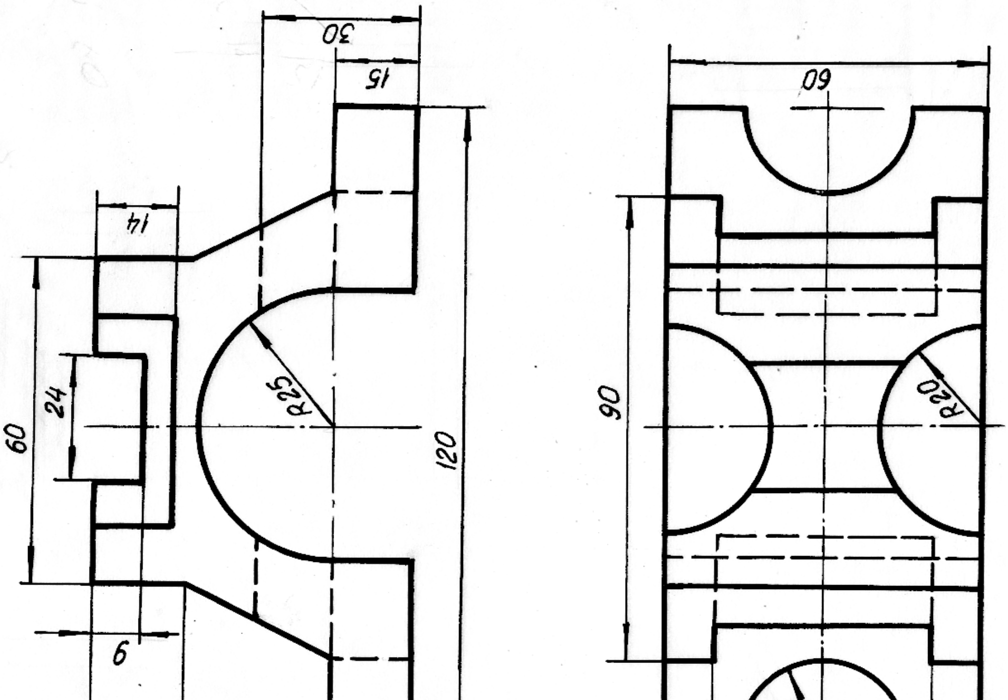

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