



GAP 4.10.2 of 19-Jun-2019
<https://www.gap-system.org>
 Architecture: i686-pc-cygwin-default32-kv3

Configuration: gmp 6.1.2, readline

Loading the library and packages ...

Packages: AClib 1.3.1, Alnuth 3.1.1, AtlasRep 2.1.0, AutoDoc 2019.05.20, AutPGrp 1.10, Browse 1.8.8, CRISP 1.4.4, Cryst 4.1.19, CrystCat 1.1.9, CTblLib 1.2.2, FactInt 1.6.2, FGA 1.4.0, Forms 1.2.5, GAPDoc 1.6.2, genss 1.6.5, IO 4.6.0, IRREDSOL 1.4, LAGUNA 3.9.3, orb 4.8.2, Polenta 1.3.8, Polycyclic 2.14, PrimGrp 3.3.2, RadiRoot 2.8, recog 1.3.2, ResClasses 4.7.2, SmallGrp 1.3, Sophus 1.24, SpinSym 1.5.1, TomLib 1.2.8, TransGrp 2.0.4, utils 0.63

Try '??help' for help. See also '?copyright', '?cite' and '?authors'

```
gap> g:=Group((2,4,6)(3,7,5),(1,2,3)(4,5,10)(6,7,8));
```

```
Group([ (2,4,6)(3,7,5), (1,2,3)(4,5,10)(6,7,8) ])
```

```
gap> Order(g);
```

```
27
```

```
gap> Elements(g);
```

```
[ (), (2,4,6)(3,7,5), (2,6,4)(3,5,7), (1,2,3)(4,5,10)(6,7,8), (1,2,5)(3,8,6)(4,7,10), (1,2,7)(3,10,4)(5,8,6),
(1,3,2)(4,10,5)(6,8,7), (1,3,4)(2,8,7)(5,6,10),
(1,3,6)(2,10,5)(4,8,7), (1,4,5)(2,3,8)(6,7,10), (1,4,7)(2,5,8)(3,10,6), (1,4,3)(2,7,8)(5,10,6), (1,5,2)(3,6,8)(4,10,7),
(1,5,4)(2,8,3)(6,10,7), (1,5,6)(2,10,7)(3,4,8),
(1,6,7)(2,3,10)(4,5,8), (1,6,3)(2,5,10)(4,7,8), (1,6,5)(2,7,10)(3,8,4), (1,7,2)(3,4,10)(5,6,8), (1,7,4)(2,8,5)(3,6,10),
(1,7,6)(2,10,3)(4,8,5), (1,8,10)(3,5,7),
(1,8,10)(2,4,6), (1,8,10)(2,6,4)(3,7,5), (1,10,8)(3,7,5), (1,10,8)(2,4,6)(3,5,7), (1,10,8)(2,6,4) ]
```

```
gap> z:=Center(g);
```

```
Group([ (1,10,8)(2,4,6)(3,5,7) ])
```

```
gap> Order(z);
```

```
3
```

```
gap> g.1;
```

```
(2,4,6)(3,7,5)
```

```
gap> g.2;
```

```
(1,2,3)(4,5,10)(6,7,8)
```

```
gap> g.1*g.2;
```

```
(1,2,5)(3,8,6)(4,7,10)
```

```
gap> f:=FreeGroup("a","b");
```

```
<free group on the generators [ a, b ]>
```

```
gap> g:=f/[f.1^3,f.2^3];
```

```
<fp group on the generators [ a, b ]>
```

```
gap> Order(g);
```

```
#I Coset table calculation failed -- trying with bigger table limit
```

```
Error, user interrupt in
```

```
firstDef := next[firstDef]; at /proc/cygdrive/C/gap-4.10.2/lib/grpfp.gi:1285 called from
```

```
TCENUM.CosetTableFromGensAndRels( fgens, grels, fsgens ) at /proc/cygdrive/C/gap-4.10.2/lib/grpfp.gi:1063 called from
```

```
CosetTableFromGensAndRels( fgens, grels, List( trial, UnderlyingElement ) ) at /proc/cygdrive/C/gap-4.10.2/lib/grpfp.gi:3769 called from
```

```
Attempt( gens ) at /proc/cygdrive/C/gap-4.10.2/lib/grpfp.gi:3782 called from
```

```
FinIndexCyclicSubgroupGenerator( G, infinity ) at /proc/cygdrive/C/gap-4.10.2/lib/grpfp.gi:3849 called from
```

```
<function "unknown">( <arguments> )
```

```

called from read-eval loop at *stdin*:14
you can 'return;'
brk> quit;
#I Options stack has been reset
gap> g:=f/[f.1^3,f.2^3,(f.1*f.2)^3];
<fp group on the generators [ a, b ]>
gap> Order(g);
#I Coset table calculation failed -- trying with bigger table limit
Error, user interrupt in
  nrmx := firstFree; at /proc/cygdrive/C/gap-4.10.2/lib/grpfp.gi:1250 called from
TCENUM.CosetTableFromGensAndRels( fgens, grels, fsgens ) at /proc/cygdrive/C/gap-4.10.2/lib/grpfp.gi:1063 called
from
CosetTableFromGensAndRels( fgens, grels, List( trial, UnderlyingElement ) ) at /proc/cygdrive/C/gap-
4.10.2/lib/grpfp.gi:3769 called from
Attempt( gens ) at /proc/cygdrive/C/gap-4.10.2/lib/grpfp.gi:3782 called from
FinIndexCyclicSubgroupGenerator( G, infinity ) at /proc/cygdrive/C/gap-4.10.2/lib/grpfp.gi:3849 called from
<function "unknown">( <arguments> )
called from read-eval loop at *stdin*:15
you can 'return;'
brk> quit;
#I Options stack has been reset
gap> g:=f/[f.1^3,f.2^3,(f.1*f.2)^3,(f.1^2*f.2)^3];
<fp group on the generators [ a, b ]>
gap> Order(g);
27
gap> g:=f/[f.1^3,f.2^3,(f.1*f.2)^3,(f.1^2*f.2)^3,(f.1*f.2^2)^3,(f.1*f.2*f.1*f.2)^3];
<fp group on the generators [ a, b ]>
gap> Order(g);
27
gap> IsAbelian(g);
false
gap> IsCyclic(g);
false
gap> IsSolvable(g);
true
gap> IsNilpotent(g);
true
gap> 23984623787452368^9;
262661364639472424899285011653535122651696955466325101203472328659265874939128735726695840560
5763219225269886449972354429152090584036291911004192768
gap> Exponent(g);
3
gap>

```