

Graphs in R

G. Marchetti

Invalid Date

Using **ggm**, **grBase**, **igraph** together

Using **grBase**

Adjacency matrix

```
A <- ug(~a*b, ~b*c*d, ~e)
as(A, "matrix")
```

	a	b	c	d	e
a	0	1	0	0	0
b	1	0	1	1	0
c	0	1	0	1	0
d	0	1	1	0	0
e	0	0	0	0	0

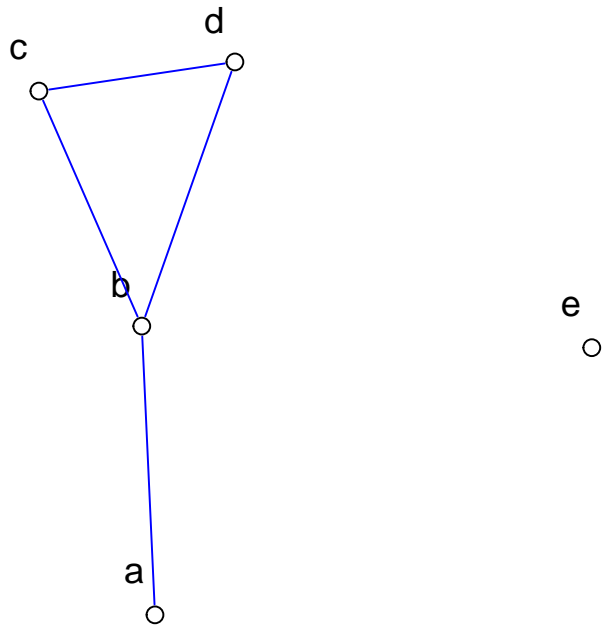
Using **ggm**

Adjacency matrix and plot

```
G <- UG(~a*b + b*c*d + e)
G
```

	a	b	c	d	e
a	0	1	0	0	0
b	1	0	1	1	0
c	0	1	0	1	0
d	0	1	1	0	0
e	0	0	0	0	0

```
drawGraph(G, layout = layout_nicely)
```



Find cliques

With **gRbase**

```
get_cliques(A)
```

```
[[1]]  
[1] "e"
```

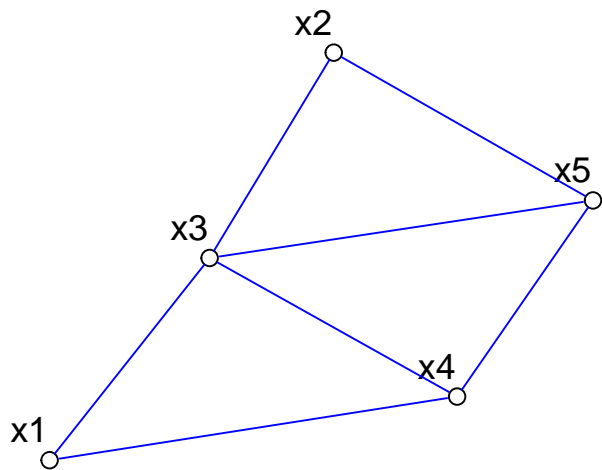
```
[[2]]  
[1] "a" "b"
```

```
[[3]]  
[1] "b" "c" "d"
```

Separation

With **ggm** and **igraph**

```
G <- UG( ~ x1*x3*x4 + x2*x3*x5 + x3*x4*x5)
drawGraph(G, layout = layout_nicely)
```



With gRbase and igraph

```
g <- graph_from_adjacency_matrix(G, mode = "undirected")
separates("x5", "x1", "x4", g)
```

```
[1] FALSE
```

```
separates("x5", "x1", c("x4", "x3"), g)
```

```
[1] TRUE
```

```
get_cliques(g)
```

```
[[1]]
[1] "x1" "x3" "x4"
```

```
[[2]]
[1] "x3" "x5" "x4"
```

```
[[3]]
[1] "x3" "x5" "x2"
```

Exercise

Lauritzen's graph

```
G <- UG(~ x1*x2 + x2*x5 + x5*x3 +  
        + x1*x3 + x2*x4 + x4*x7 +  
        + x7*x5 + x3*x6 + x5*x6 + x7*x6)  
drawGraph(G, layout = layout_nicely)
```

