```julia
using Distributions, Gadfly, Cairo;
```

In [21]:

```julia
white_panel = Theme(
panel_fill=colorant"white",
default_color=colorant"purple",bar_spacing=3mm,
major_label_font_size=18pt,
minor_label_font_size=14pt,
key_title_font_size = 18pt,
key_label_font_size = 14pt,
major_label_color=colorant"black",
minor_label_color=colorant"black"
);
x = collect(0:0.001:1);
prior = ones(length(x));
d1 = Beta(11,41);
d3 = Beta(51,51);
posterior1 = pdf.(d1,x);
posterior3 = pdf.(d3,x);
myplot = plot(
layer(x=x,y=posterior1,Geom.line,Theme(default_color=colorant"purple")),
layer(x=x,y=posterior3,Geom.line,Theme(default_color=colorant"blue")),
layer(x=x,y=prior,Geom.line,Theme(default_color=colorant"black")),
Coord.Cartesian(xmin=0, xmax=1,ymax=10.2), Guide.ylabel("probability"),
Guide.xlabel(""),
Guide.manual_color_key("", ["p(theta|y)
NH=10,NT=40",
"p(theta|y)
NH=50,NT=50", "p(theta)"],
["purple","blue","black"]), white_panel);
draw(PNG(9inch, 4inch),myplot)
```
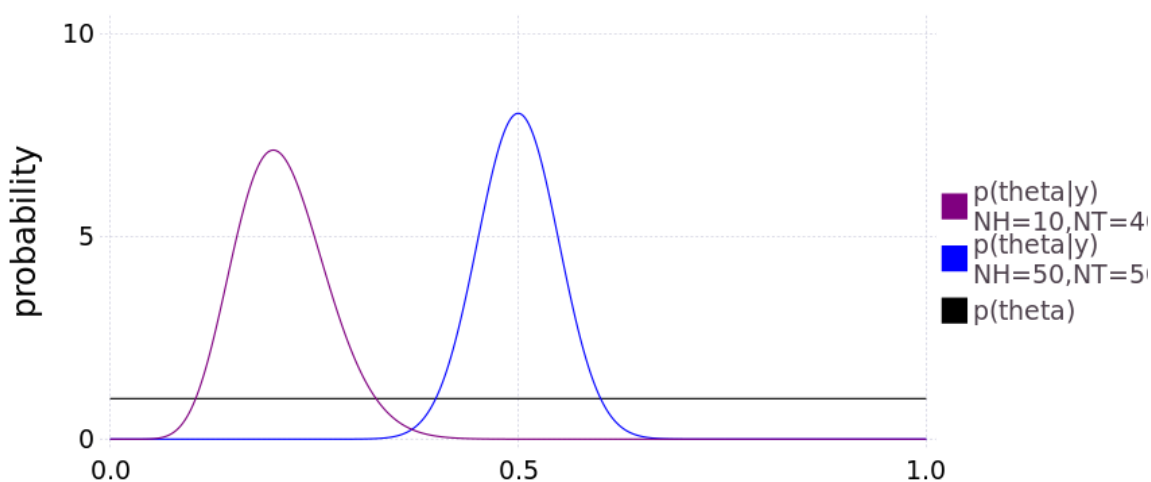

Out[21]:

false

The functional form of posterior distribution of part c and d are equivalent with different normalizing constant. So we calculate beta distribution as Beta(51,51)

In [ ]: