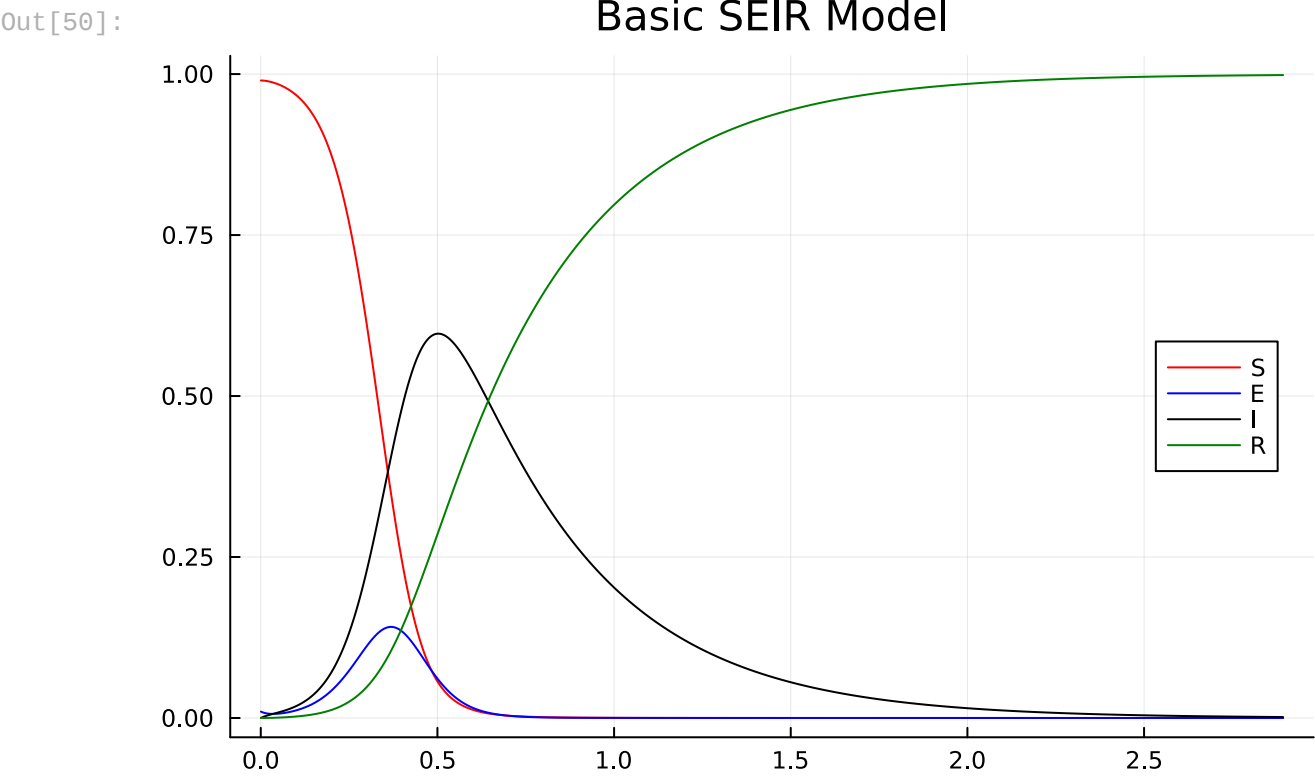In [50]:
```
using Plots

#Initial values
s=0.99
e=0.01
i=0
r=0
x=0
dx=0.01

#Parameters beta=1 , a=1 , gamma=0.1

m_val=Float64[]
s_val=Float64[]
e_val=Float64[]
i_val=Float64[]
r_val=Float64[]

while x<75
    ds = -i*s
    de = i*s - e
    dr = 0.1*i
    s = s + ds*dx
    e = e + de*dx
    r = r + dr*dx
    x = x + dx
    t = 100000*x
    m = t/(2592000)
    i = 1 - s - e - r
    push!(m_val,m)
    push!(s_val,s)
    push!(e_val,e)
    push!(i_val,i)
    push!(r_val,r)
end
println(s,e,i,r)
p1 = plot(m_val,s_val, title = "Basic SEIR Model", colour=:red, label="S")
p2 = plot!(m_val,e_val, colour=:blue, label="E")
p3 = plot!(m_val,i_val, colour=:black, label="I")
p4 = plot!(m_val,r_val, colour=:green, label="R")
plot!(legend=:right)
```

4.481818187819169e-57.482175903004126e-80.00149977521172917070.9984553317846336

Out[50]:

Basic SEIR Model

In [49]:
```
using Plots

#Initial values
s=0.99
e=0.01
i=0
r=0
x=0
dx=0.01

#parameters beta=1, a=1 , gamma=0.1 , nu=0.02 (Birth and Death rates are same)

m_val=Float64[]
s_val=Float64[]
e_val=Float64[]
i_val=Float64[]
r_val=Float64[]

while x<100
    ds = -i*s + 0.02 - 0.02*s
    de = i*s - (1 + 0.02)*e
    dr = 0.1*i - 0.02*r
    s = s + ds*dx
    e = e + de*dx
    r = r + dr*dx
    i = 1 - s - e - r
    x = x + dx
    t = 100000*x
    m = t/(2592000)
    push!(m_val,m)
    push!(s_val,s)
    push!(e_val,e)
    push!(i_val,i)
    push!(r_val,r)
end
println(s,e,i,r)
p1 = plot(m_val,s_val, title = "SEIR Model with Vital Dynamics", colour=:red, label="S")
p2 = plot!(m_val,e_val, colour=:blue, label="E")
p3 = plot!(m_val,i_val, colour=:black, label="I")
p4 = plot!(m_val,r_val, colour=:green, label="R")
plot!(legend=:right)
```

0.1221301512419791100.0171932055859235870.143579272110089470.7170973710620078

SEIR Model with Vital Dynamics