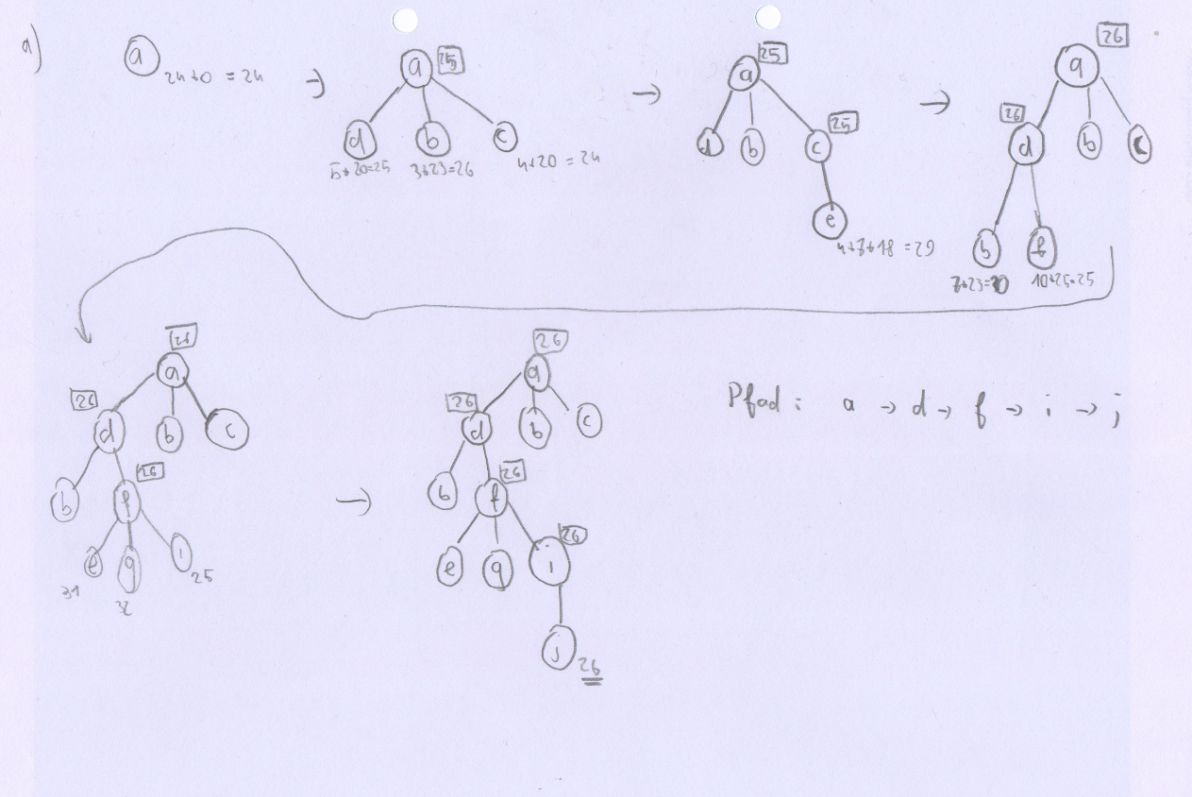
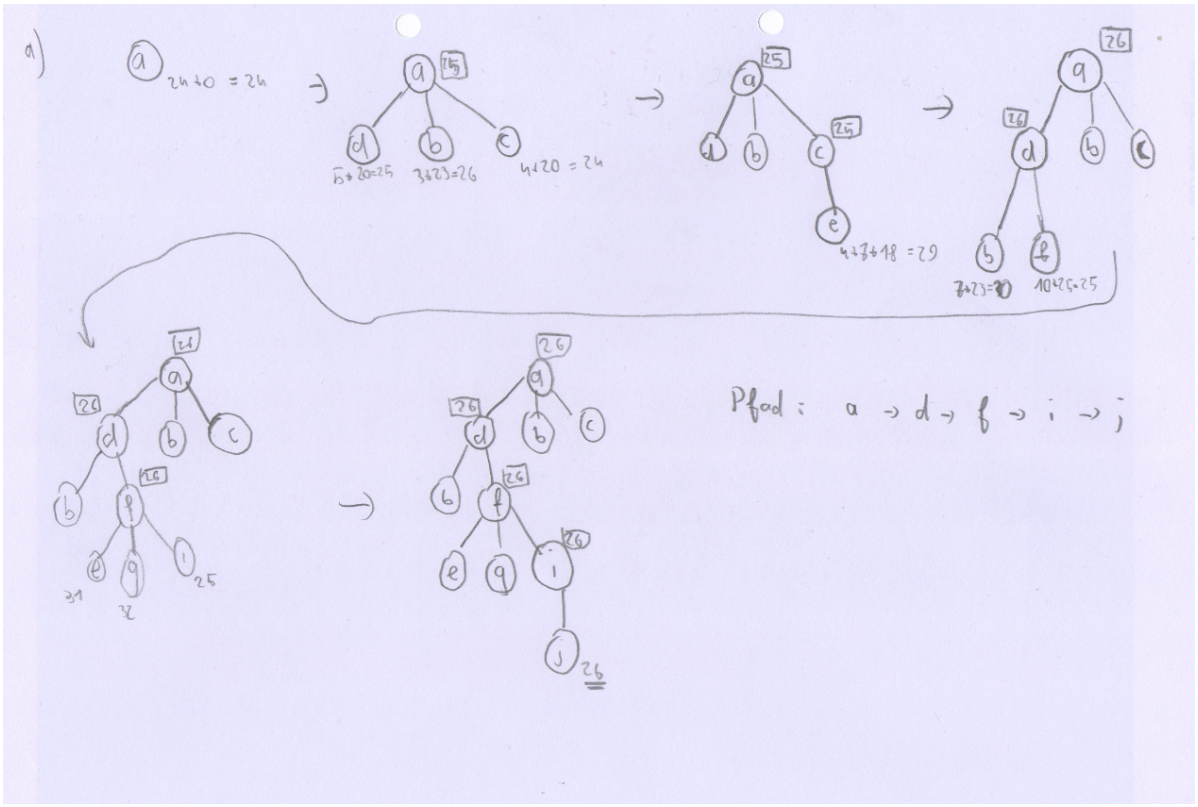
1

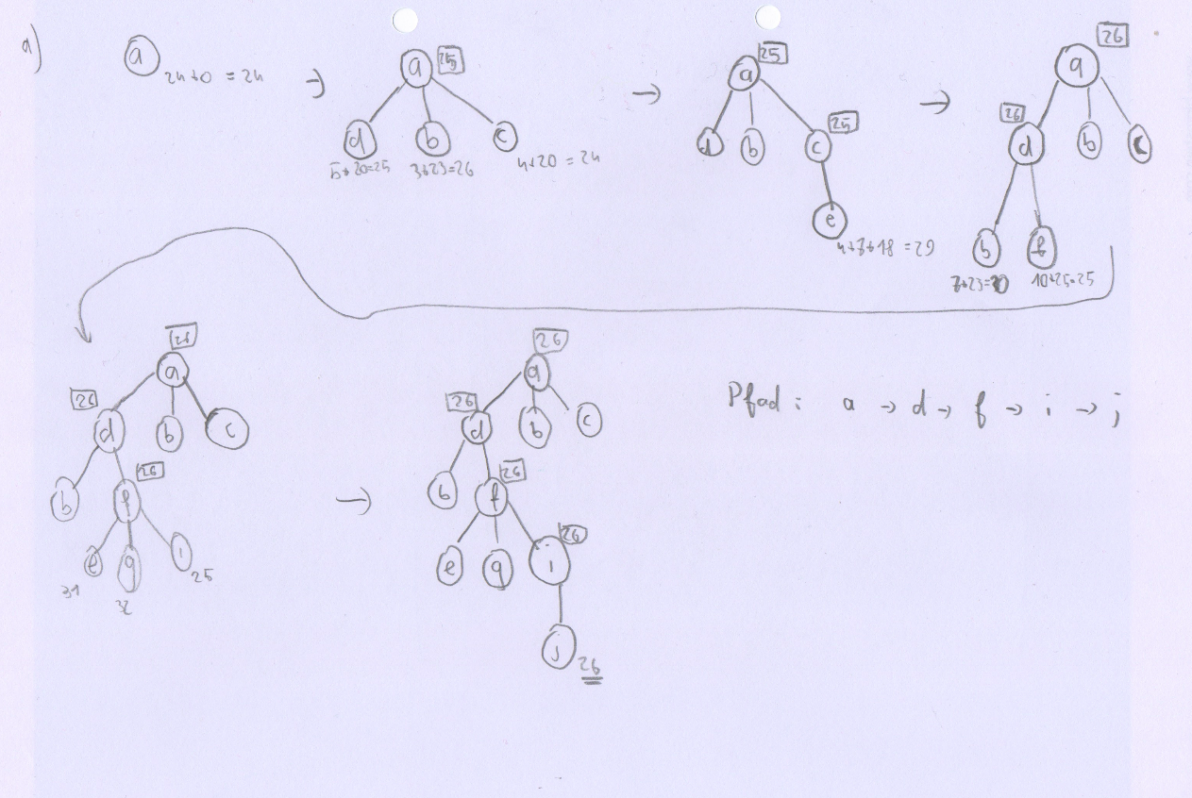
a)



b)



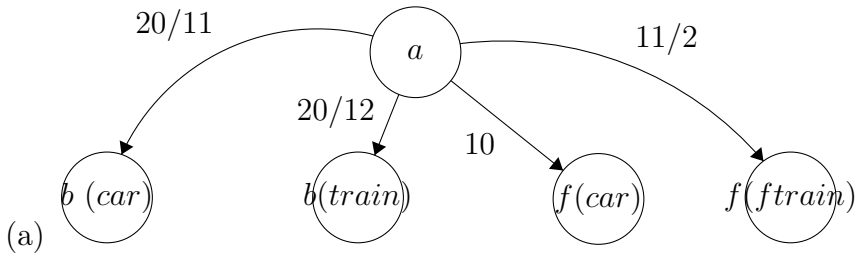
c)

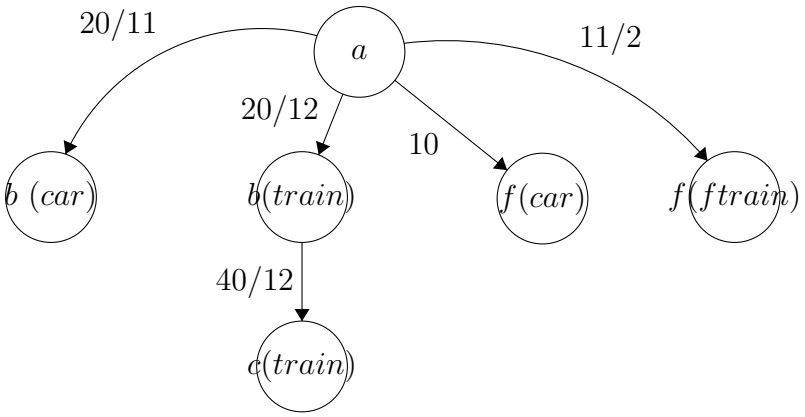


2 A*

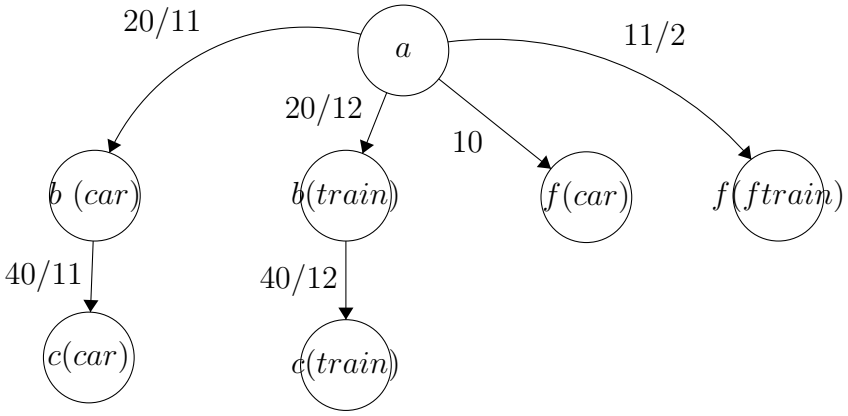
In the following graphs we are using the path to show the time in hours already taken up to this point. Every time is actually the results of the $f = g + h$ function but h is a constant 0. Therefore we are only showing g. The results are shown on the path and not on the nodes only for purposes of oversight. Usually they would be depicted at the nodes directly.

a)

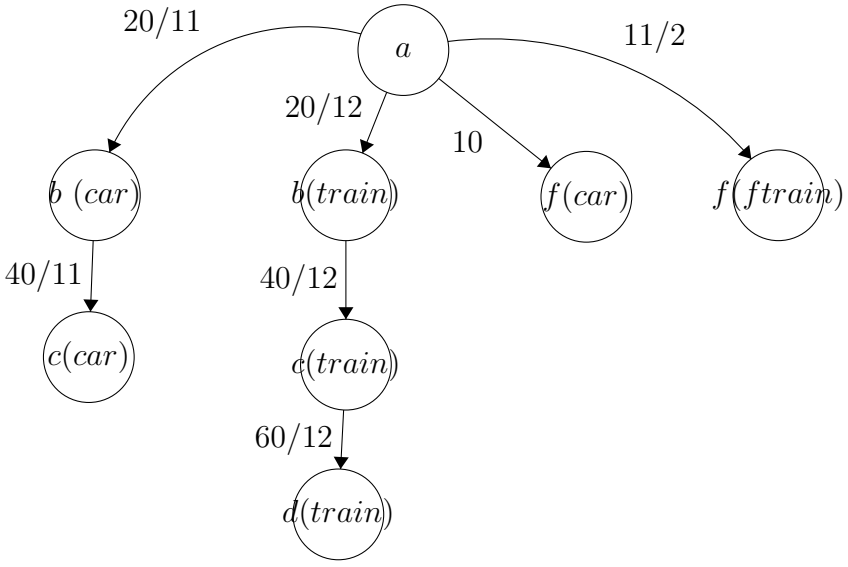



20/11
a
11/2
20/12
10
b (car)
b(train)
f(car)
f(ftrain)
40/12
c(train)

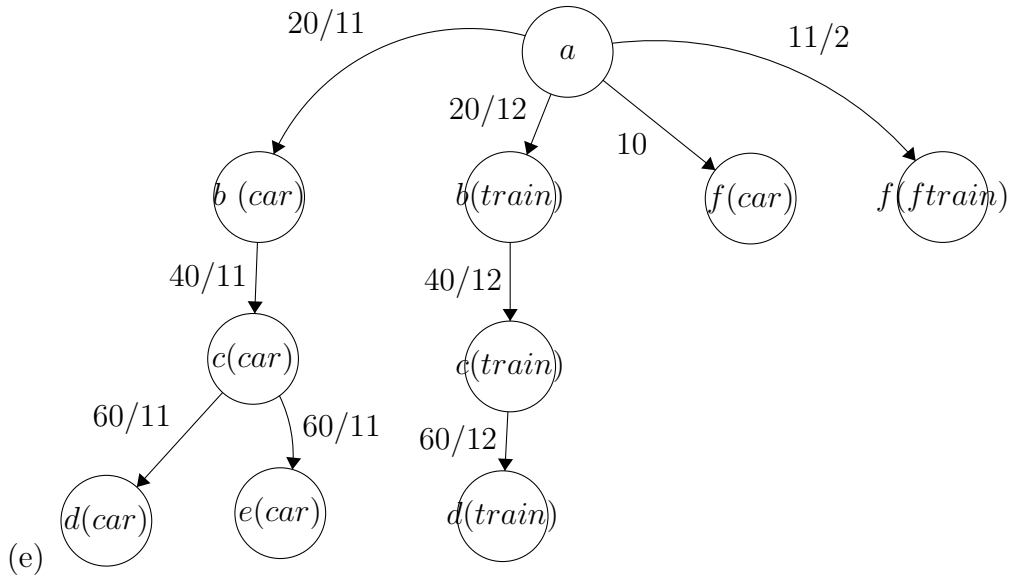
(b)


20/11
a
11/2
20/12
10
b (car)
b(train)
f(car)
f(ftrain)
40/11
40/12
c(car)
c(train)

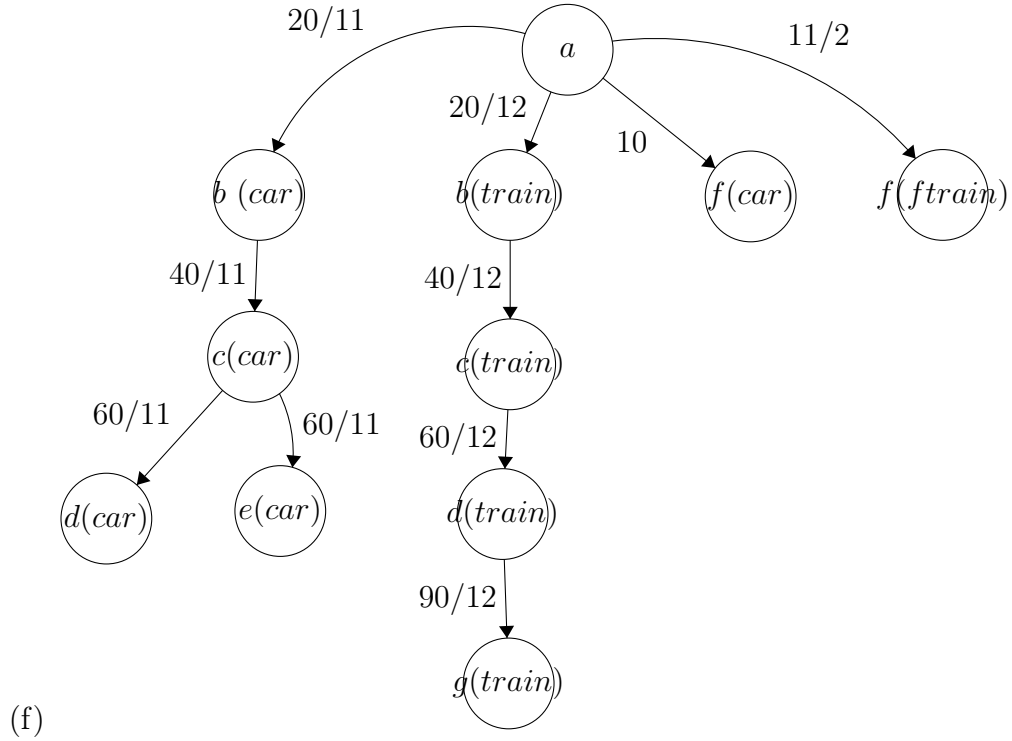
(c)


20/11
a
11/2
20/12
10
b (car)
b(train)
f(car)
f(ftrain)
40/11
40/12
c(car)
c(train)
60/12
d(train)

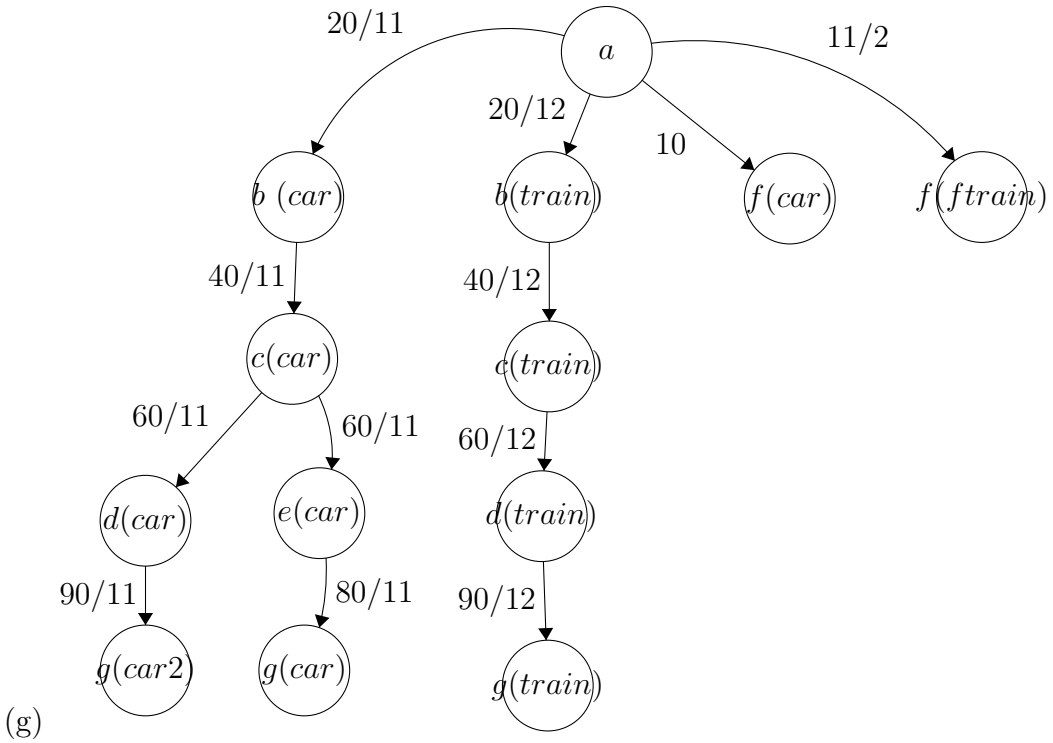
(d)


20/11
a
11/2
20/12
10
b (car)
b(train)
f(car)
f(ftrain)
40/11
40/12
c(car)
c(train)
60/11
60/11
60/12
d(car)
e(car)
d(train)

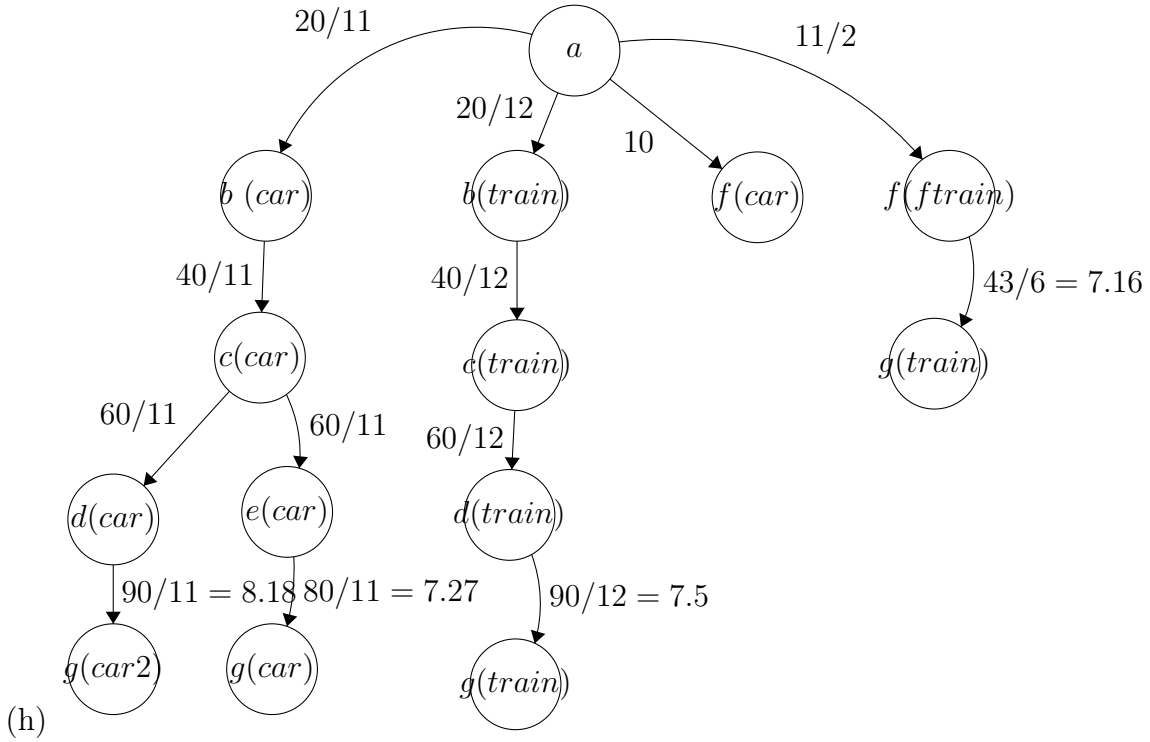
(e)


20/11
a
11/2
20/12
10
b (car)
b(train)
f(car)
f(ftrain)
40/11
40/12
c(car)
c(train)
60/11
60/11
60/12
d(car)
e(car)
d(train)
90/12
g(train)

(f)



(g)

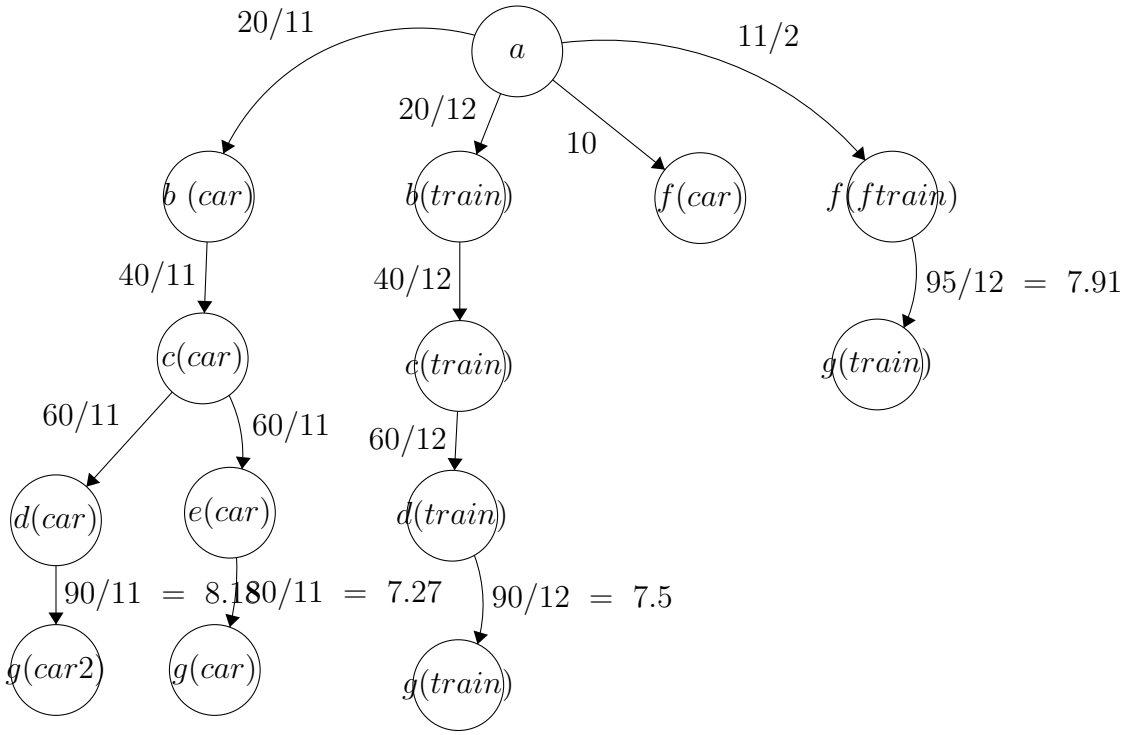


(h)

$\Rightarrow$ the fastest way is the fast train over f and then taking the normal train to g

b)

if the train connection takes an additional 45 minutes the path over f now takes $11/2 + 0.75 + 20/12 = 7.9$. The fastest way now is by car over b c e and g. This is the new graph:



3 lisp