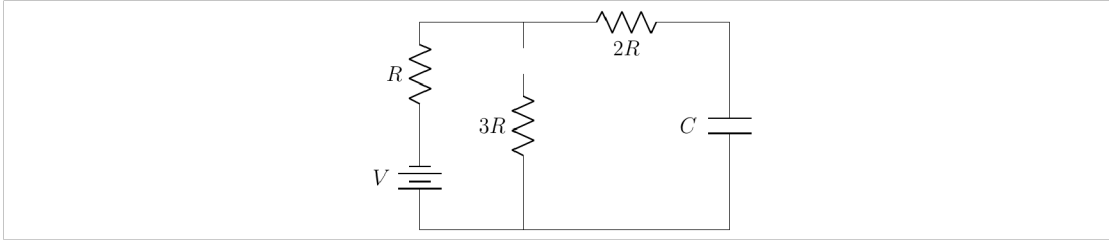
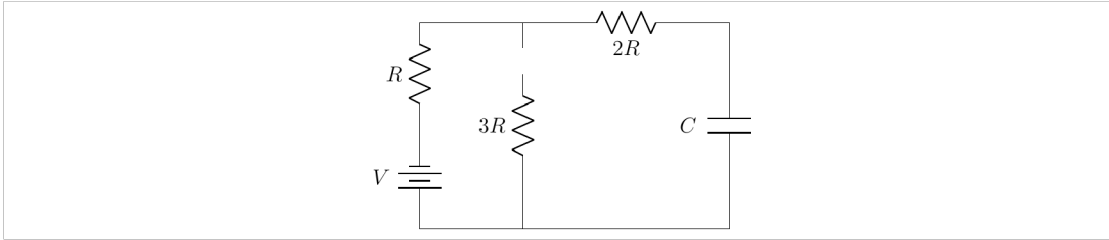


In[2798]:= **Remove["Global`\*"];**

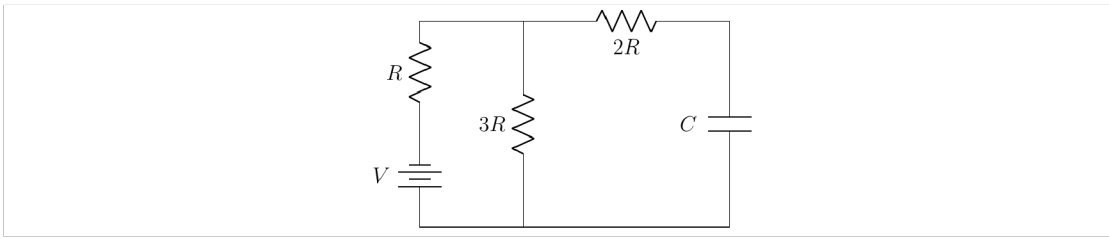
In[2799]:=



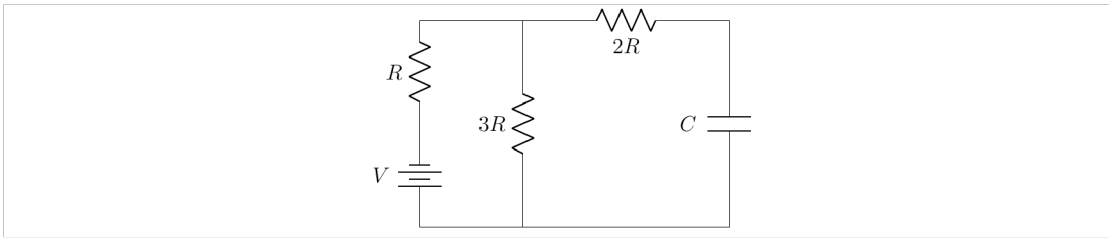
Out[2799]=



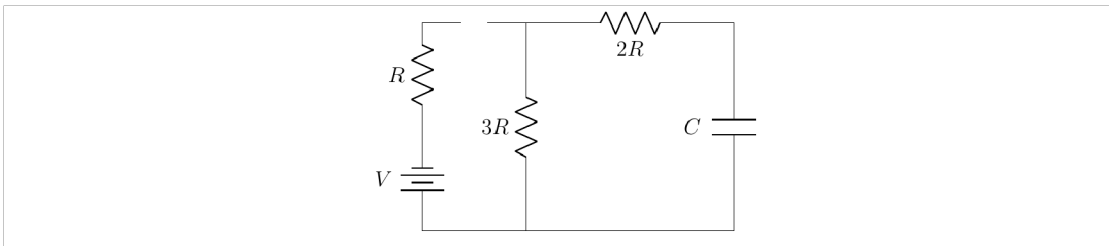
In[2800]:=



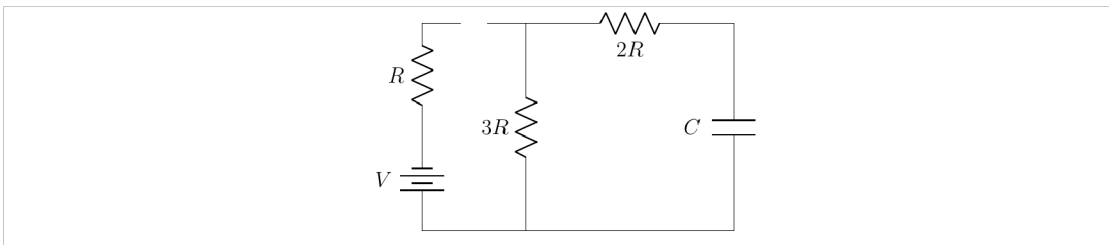
Out[2800]=



In[2801]:=



Out[2801]=



```

In[2845]:= V = 1;
R = 1;
c = 1;
t0 = 0;
t1 = 20;
t2 = 40;
t3 = 60;
ode1 = {V - Q[t] / c - 2 R Q'[t] - 1 R Q'[t] == 0, Q[t0] == 0};
soln1 = NDSolve[ode1, Q, {t, t0, t1}];
c1 = Q /. First[soln1];
ode2 = {I1[t] == I2[t] + Q'[t], V - Q[t] / c - 2 R Q'[t] - 1 R I1[t] == 0,
  V - 3 R I2[t] - 1 R I1[t] == 0, Q[t1] == c1[t1]};
soln2 = NDSolve[ode2, Q, {t, t1, t2}];
soln2b = NDSolve[ode2, I2, {t, t1, t2}];
c2 = Q /. First[soln2];
ode3 = {-Q[t] / c - 2 R Q'[t] - 3 R Q'[t] == 0, Q[t2] == c2[t2]};
soln3 = NDSolve[ode3, Q, {t, t2, t3}];
charge = Piecewise[{{Q[t] /. soln1, t0 < t < t1},
  {Q[t] /. soln2, t1 < t < t2}, {Q[t] /. soln3, t2 < t < t3}}];
current2 = Piecewise[{{Q'[t] /. soln1, t0 < t < t1},
  {Q'[t] /. soln2, t1 < t < t2}, {Q'[t] /. soln3, t2 < t < t3}}];
voltage3 = Piecewise[{{Q[t] - Q[t] /. soln1, t0 < t < t1},
  {I2[t] /. soln2b, t1 < t < t2}, {3 Q'[t] /. soln3, t2 < t < t3}}];
(*make sure data types agree*)
Plot[charge, {t, t0, t3}, PlotRange -> {{t0, t3}, {0, 1}}]
Plot[current2, {t, t0, t3}, PlotRange -> {{t0, t3}, {-0.2, 0.4}}]
Plot[voltage3, {t, t0, t3}, PlotRange -> {{t0, t3}, {-0.5, 0.3}}]

```

