```
function dydt=orbitfun(t,y)
%{
  y      - column vector containing the position and velocity vectors
           of the system at time t
  r      - position vector
  v      - velocity vector
  mu     - gravitational parameter for eartg
  rn     - magnitude of the relative position vector
  a      - acceleration vectors of m1 & m2
  dydt   - column vector containing the velocity and acceleration
           vectors of the system at time t

%}
r=[y(1);y(2);y(3)];
v=[y(4);y(5);y(6)];

mu=398600;
rn=norm(r);

a=[(-mu/rn^3)*r(1);(-mu/rn^3)*r(2);(-mu/rn^3)*r(3)];

dydt=[v;a];
end
```

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