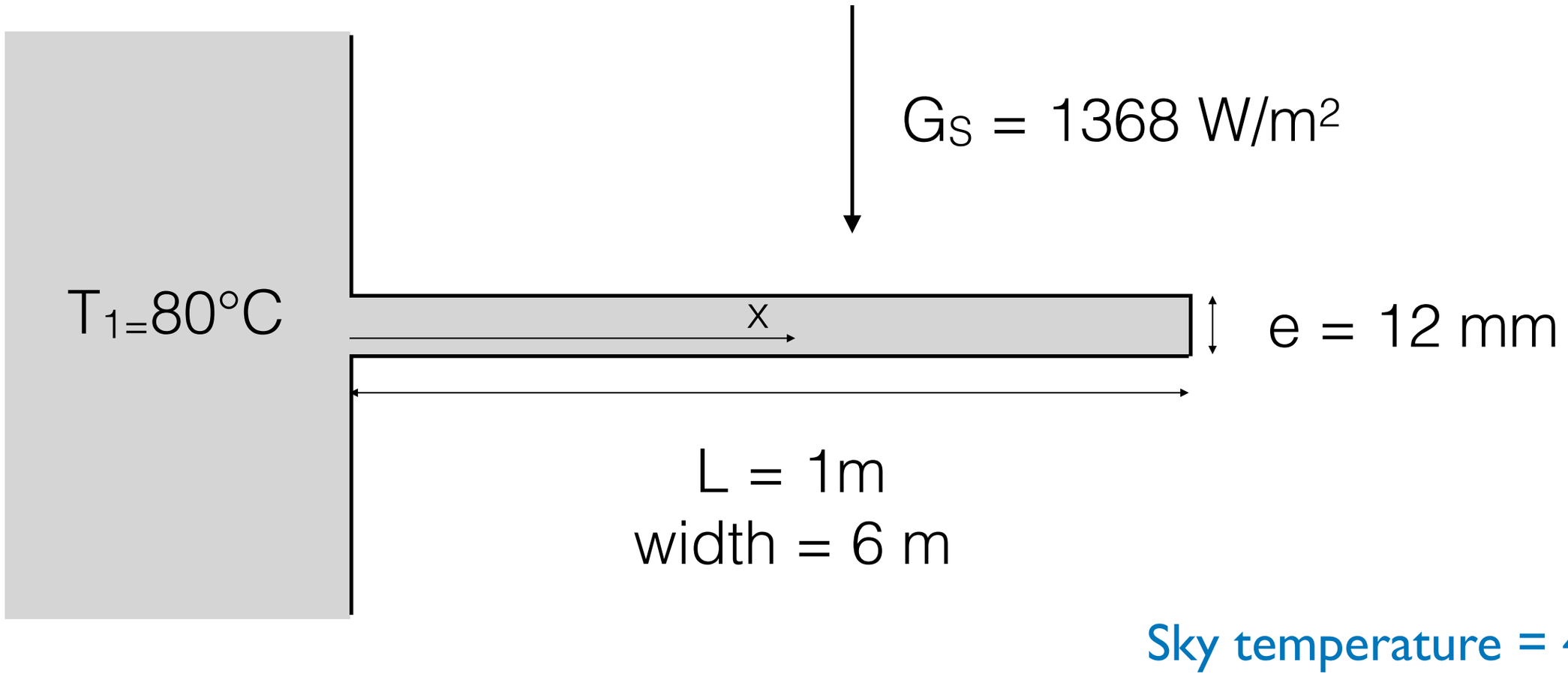
A radiator in space



λ_M = 300 W/m.K
Solar absorptivity = 0.45
Emissivity = 0.9

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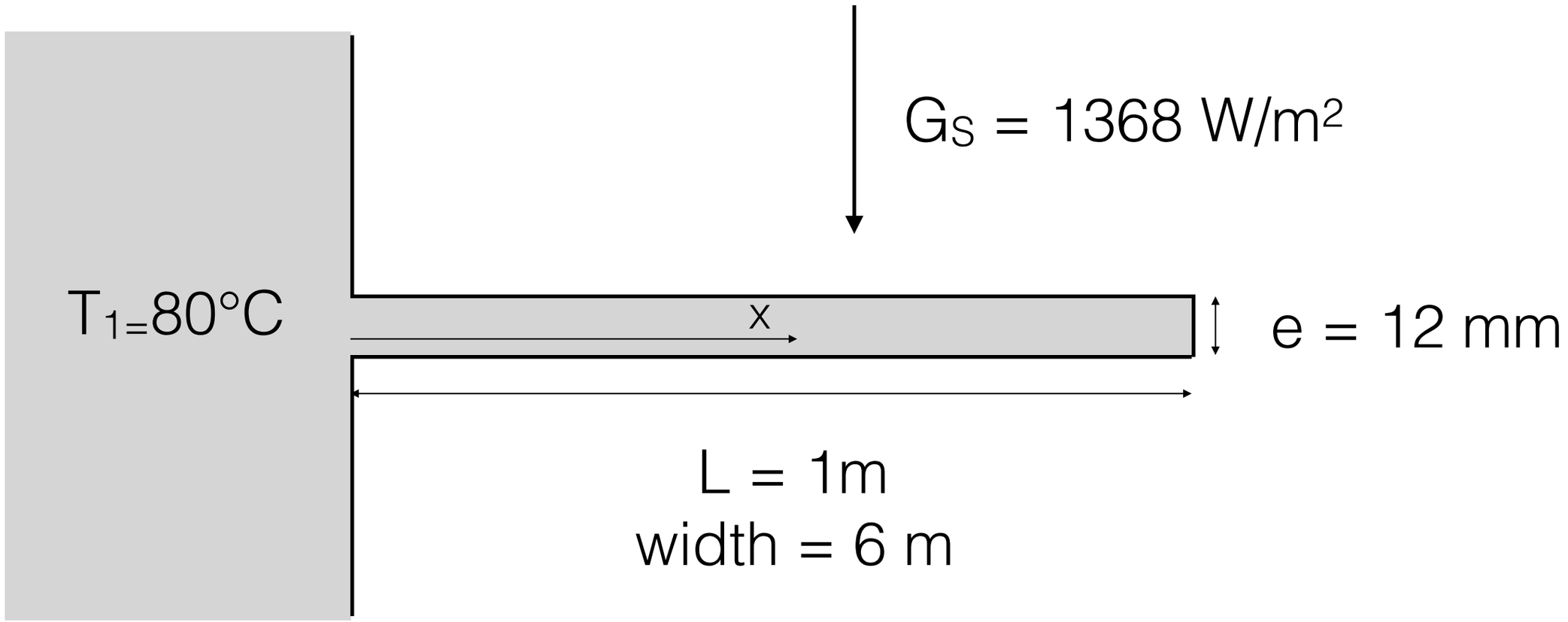

λ_M = 300 W/m.K
Solar absorptivity = 0.45
Emissivity = 0.9

Write the flux radiated to outer space
Derive an equation for the temperature distribution within the fin
Write the equation in dimensionless variable
What happens when there is no solar radiation
Solve the equation numerically

```
[t,y]=ode15s(@radia,[0 0.625],[1 ; -0.44]);
plot(t,y(:,1),'-o');
xlabel('x/l','FontSize',14);
ylabel('T/T1','FontSize',14);
grid on;

function dydt=radia(t,y)
dydt=[y(2);y(1)^4]
end
```

A Matlab code to solve numerically the differential equation

```
[t,y]=ode15s(@radia,[0 0.625],[1 ; -0.44]);
plot(t,y(:,1),'-o');
xlabel('x/l','FontSize',14);
ylabel('T/T1','FontSize',14);
grid on;

function dydt=radia(t,y)
dydt=[y(2);y(1)^4]
end
```

A Matlab code to solve numerically the differential equation