

```
function d_state_dt = Satellite(t, state)
```

```
planet
```

```
r_vector = state(1:3);
```

```
v_vector = state(4:6);
```

```
r = norm(r_vector);
```

```
r_dot_vector = v_vector;
```

```
v_dot_vector = -Mu*r_vector/r^3;
```

```
d_state_dt = [r_dot_vector;v_dot_vector];
```