```
k = 30; m = 1500;
syms v(x) x
diff_eqn = diff(v,x) == (-k * v^3 * (x + 1)^3) / m;
sol = dsolve(diff_eqn, v(0)==90*1000/3600);

disp("v(x) = ")
```

```
v(x) =
```

```
disp(sol)
```

$$10\sqrt{\frac{1}{x^4+4\,x^3+6\,x^2+4\,x+\frac{4}{25}}}$$

```
sol = matlabFunction(sol);
x_span = linspace(0, 3, 1000);
plot(x_span, sol(x_span), "LineWidth", 2)
title("Velocity vs Displacement Graph")
xlabel("x (m)")
ylabel("v (m/s)")
```