```
Xs = 5;
Xs_dot = 0;
```

```
dxdt = @(t, x) [x(2); (B * (Xs_dot - x(2)) + k * (Xs - x(1)) + a * (Xs - x(1))^3) / m]
```

```
dxdt = function_handle with value:
    @(t,x)[x(2);(B*(Xs_dot-x(2))+k*(Xs-x(1))+a*(Xs-x(1))^3)/m]
```

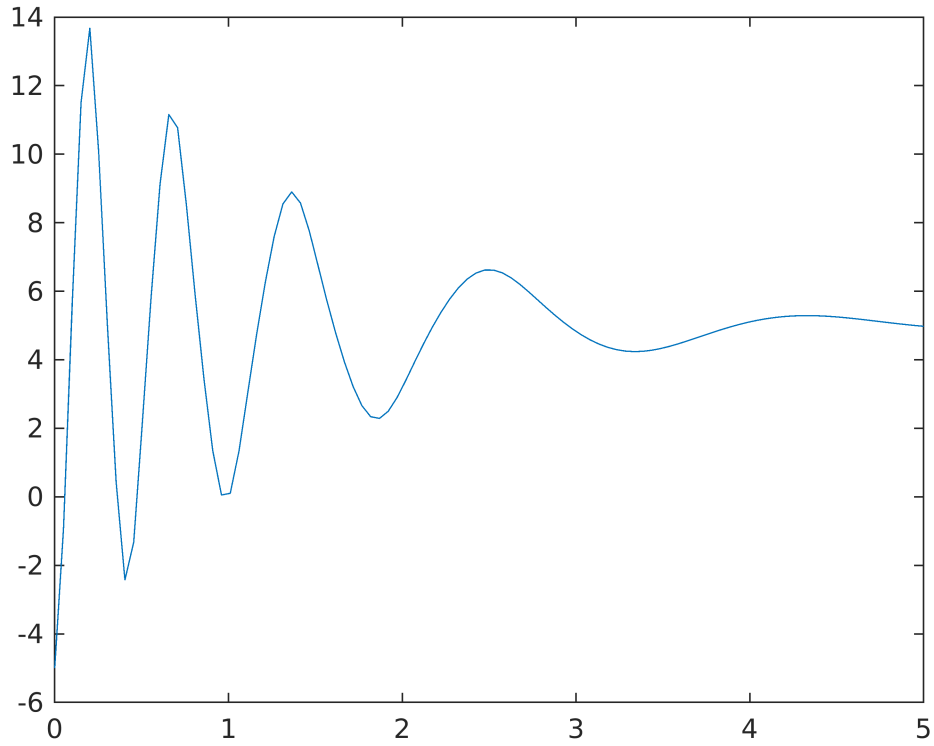
```
m = 100;
k = 1000;
a = 400;
B = 200;
```

```
x0 = [-5; 0];
```

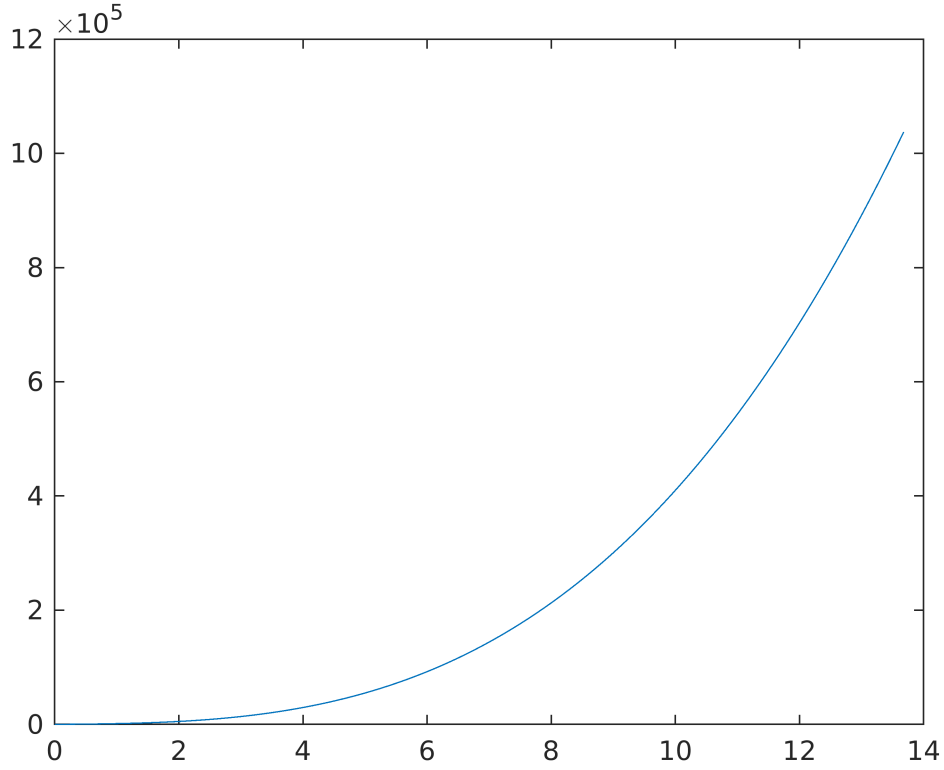
```
[t, x] = ode45(dxdt, linspace(0, 5), x0)
```

```
t = 100×1
         0
    0.0505
    0.1010
    0.1515
    0.2020
    0.2525
    0.3030
    0.3535
    0.4040
    0.4545
     ⋮
x = 100×2
   -5.0000         0
   -0.9305  128.6936
    5.6714  126.1948
   11.5089   95.8576
   13.6790  -22.2817
   10.0869  -99.3429
    5.0165  -97.0991
    0.4227  -81.6613
   -2.4242  -20.6751
   -1.3258   56.9847
     ⋮
```

```
plot(t, x(:, 1))
```




```
xk = linspace(0, max(x(:,1)));
fk = k * xk + a * xk.^3;
plot(xk, fk)
```


×10^5
12
10
8
6
4
2
0
0
2
4
6
8
10
12
14