

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

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

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

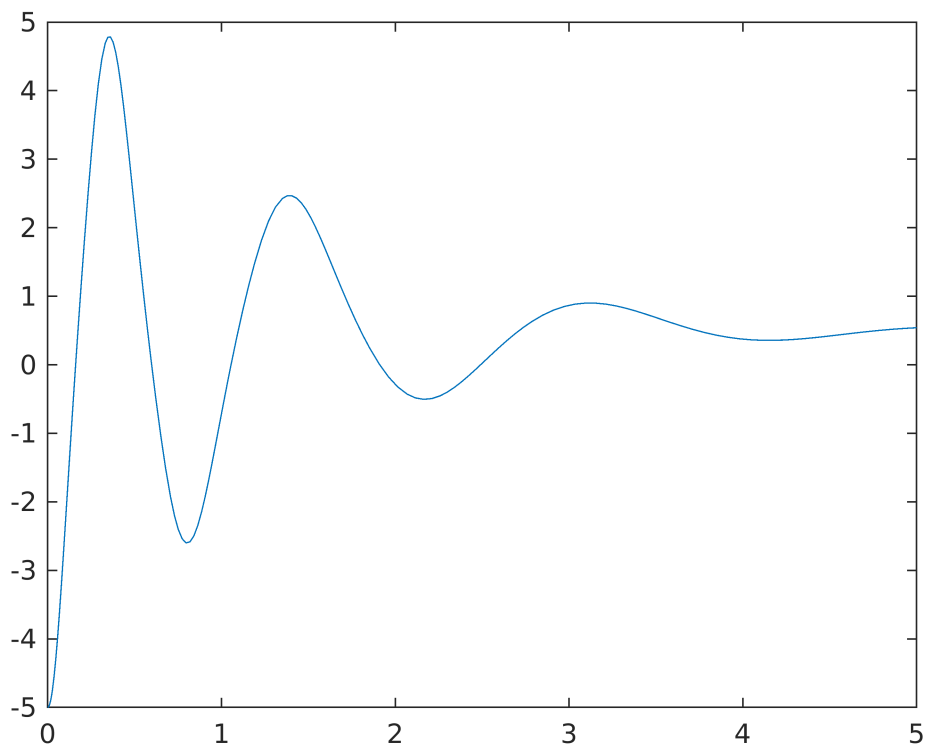
```
dxdt = @(t, x) [x(2); (B * (Xs_dot - x(2)) + k * (Xs - x(1)) + a * (Xs - x(1))^3) / m]
```

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

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

```
t = 169x1
    0
    0.0000
    0.0000
    0.0000
    0.0000
    0.0000
    0.0000
    0.0000
    0.0000
    0.0000
    0.0000
    ⋮
x = 169x2
-5.0000    0
-5.0000    0.0001
-5.0000    0.0001
-5.0000    0.0002
-5.0000    0.0002
-5.0000    0.0005
-5.0000    0.0007
-5.0000    0.0010
-5.0000    0.0012
-5.0000    0.0025
    ⋮
```

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



```
xk = linspace(0, 5);  
fk = k * xk + a * xk.^3;  
plot(xk, fk)
```

