## 1.(b) Backward differencing of $sec(x)$

We know that, backward difference of any function $f(x)$ is given by $f(x_0) = \frac{f(x_0) - f(x_0 - \Delta x)}{\Delta x}$

```
clear ALL;
clc;

syms x h;
fx = sec(x);
diff_fx = diff(fx);
bdm_fx = (fx - subs(fx, x, x - h)) / h;

bdm_to_plot = subs(bdm_fx, h, 0.1);

figure;
hold ON;
fplot(diff_fx, [-2*pi 2*pi], 'reds--');
fplot(bdm_to_plot, [-2*pi 2*pi], 'blue.-.');
legend("d/dx(sec(x))", "BDM(sec(x))");
title("Backward differencing of sec(x)");
xlabel("x \rightarrow");
ylabel("d/dx(sec(x)) \rightarrow");
hold OFF;
grid ON;
```