Max and min
Consider the quadratic function
\[ q(x) = x^2 + bx + c \]
on the interval \([L, R]\):

- Which is smaller, \(q(L)\) or \(q(R)\)?
- What is the minimum value of \(q(x)\) in \([L, R]\)?

% Fragment 1
ql= L*L + b*L + c;  % q(L)
qr= R*R + b*R + c;  % q(R)
disp('ql less than qr')
disp('qr <= ql')

% Fragment 2
ql= L*L + b*L + c;  % q(L)
qr= R*R + b*R + c;  % q(R)
fprintf('ql equals qr
')
fprintf('ql less than qr
')
fprintf('qr less than ql
')

Relational operators
- < Less than
- > Greater than
- <= Less than or equal to
- >= Greater than or equal to
- == Equal to
- ~= Not equal to
% Fragment 3

tol = 1e-9; % tolerance
qL = L*L + b*L + c; % q(L)
qR = R*R + b*R + c; % q(R)
if (abs(qL - qR) < tol)
    disp('qL is close to qR')
end

Simple if construct

if condition
    statements to execute if condition is true
else
    statements to execute if condition is false
end

The even simpler if construct

if condition
    statements to execute if condition is true
end

The if construct

if condition1
    statements to execute if condition1 is true
elseif condition2
    statements to execute if condition1 is false but condition2 is true
else
    statements to execute if all previous conditions are false
end

Rules of the if construct

- __________ branch of statements is executed
- __________ else clause
- __________ elseif clauses

What is the minimum value of \( q(x) \) in \([L, R]\)?
- What are the critical points?
- What to do with the critical points?