8. [17 marks] You are operating a monopoly firm and consultants have told you that the demand \( q \) for your product as a function of the price \( p \) you choose is

\[
q(p) = 100 - \sqrt{p}
\]

a) [2 marks] Give ranges on \( p \), \( q \) which would typically be imposed in considering alternate pricing strategies.

b) [4 marks] Give your revenue as a function of \( p \).

c) [5 marks] Give \( p \) as a function of \( q \) and then express your revenue \( R \) as a function of \( q \).

d) [6 marks] Given that the cost of production \( C(q) = 80000 + q^3 \), compute the break-even points for your firm.