3.1.41

Exercise 3.1.41 Suppose that the quantity supplied S and the quantity demanded D of T-shirts at a concert are given as:
$S(p) = -600 + 50p$ and $D(p) = 1200 - 25p$,
where p is the price of a T-shirt.
(a) Find the equilibrium price for T-shirts at this concert (where supply equals demand). What is the equilibrium quantity?
(b) Determine the prices for which the quantity demanded is greater than quantity supplied.
(c) What do you think will eventually happen to the price of T-shirts if quantity demanded is greater than quantity supplied?

Solution
(a) The equilibrium occurs when $S(p) = D(p)$ or
$-600 + 50p = 1200 - 25p$ or $50p + 25p = 1200 + 600$
or $75p = 1800$ or $p = 1800/75 = 24$.
At this price $S(24) = D(24) = 1200 - 25(24) = \boxed{600}$.
(b) We consider $D(p) > S(p)$ or
$1200 - 25p > -600 + 50p$ or $1800 > 75p$ or $24 > p$.
So for $p < \$24$ demand is greater than supply.
(c) If the quantity demanded at price p, $D(p)$, is greater the quantity supplied at the same price, $S(p)$, then the price can be raised slightly (up to \$24 in this case) and there will still be greater demand than supply. □