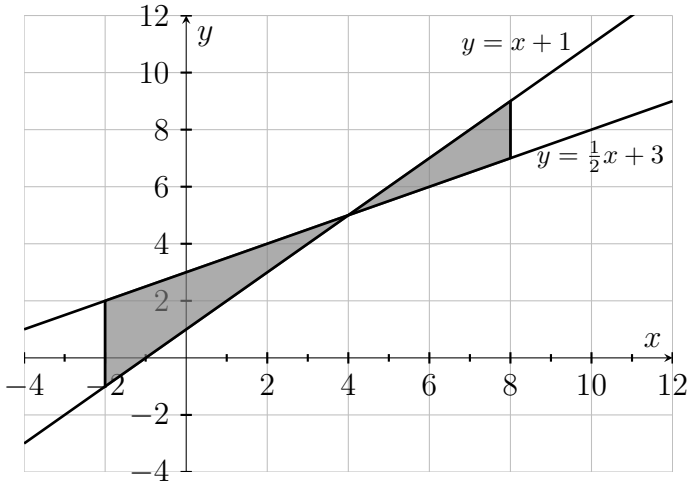
Name _____

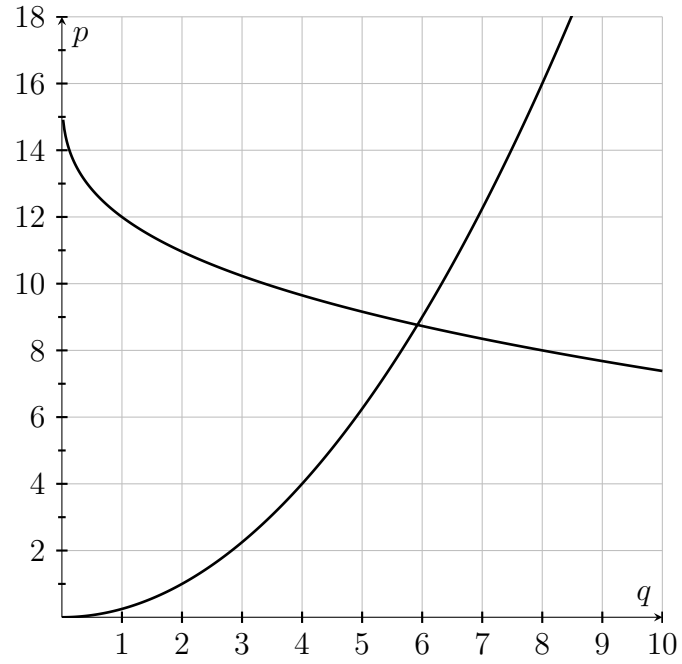
Homework 22
Sections 6.6 & 6.7

1. (4) Find the area of the region which is bounded between the graphs of $y = 3\sqrt{x}$ and $y = x + 2$.

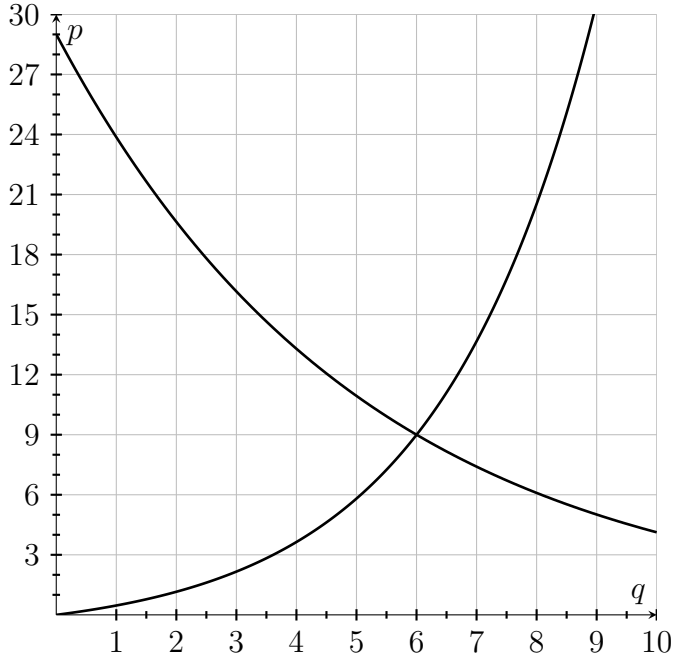
2. (5) Determine the total shaded area in the figure below.



3. (2) The supply and demand curves for a particular commodity are shown in the diagram below. Shade the portion of the graph which corresponds to the consumer surplus for the commodity if the price is set at \$10.



4. (3) The supply and demand curves for a particular item are shown in the diagram below. Use the graph to estimate the production surplus for the item, assuming that the price is set at the equilibrium price.



5. (6) Suppose the supply function for widgets is given by $S(x) = (x+1)^{\frac{3}{2}}$ and the demand function is given by $D(x) = \frac{16}{\sqrt{x+1}}$ (both in dollars). If the market price is set at the equilibrium price, determine the consumers' surplus.

   You may use the following given integrals, if necessary:

$$\int (x+1)^{\frac{3}{2}}\,dx = \frac{2}{5}(x+1)^{\frac{5}{2}} + C \qquad \int \frac{1}{\sqrt{x+1}}\,dx = 2\sqrt{x+1} + C$$