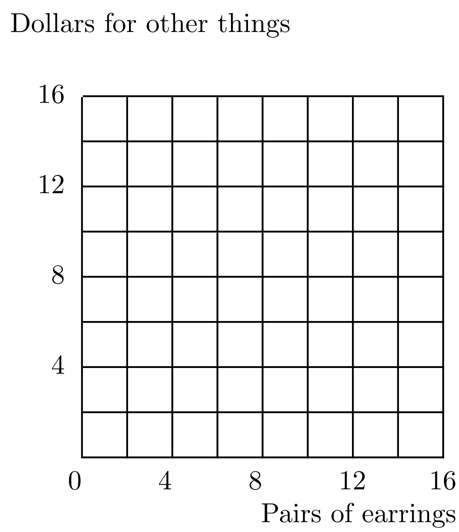
(e) No matter what prices Sarah faces, the amount of money she needs to purchase a bundle indifferent to A must be (higher, lower) than the amount she needs to purchase a bundle indifferent to B.____________.

14.5 (2) Bernice's preferences can be represented by $u(x, y) = \min\{x, y\}$, where x is pairs of earrings and y is dollars to spend on other things. She faces prices $(p_x, p_y) = (2, 1)$ and her income is 12.

(a) Draw in pencil on the graph below some of Bernice's indifference curves and her budget constraint. Her optimal bundle is ________ pairs of earrings and ________ dollars to spend on other things.



(b) The price of a pair of earrings rises to \$3 and Bernice's income stays the same. Using blue ink, draw her new budget constraint on the graph above. Her new optimal bundle is ________ pairs of earrings and ________ dollars to spend on other things.

(c) What bundle would Bernice choose if she faced the original prices and had just enough income to reach the new indifference curve? ________ Draw with red ink the budget line that passes through this bundle at the original prices. How much income would Bernice need at the original prices to have this (red) budget line?____________________.

(d) The maximum amount that Bernice would pay to avoid the price increase is ______ This is the (compensating, equivalent) variation in income.______.

(e) What bundle would Bernice choose if she faced the new prices and had just enough income to reach her original indifference curve? ______ Draw with black ink the budget line that passes through this bundle at the new prices. How much income would Bernice have with this budget?

______.

(f) In order to be as well-off as she was with her original bundle, Bernice's original income would have to rise by ______ This is the (compensating, equivalent) variation in income.______.

14.6 (0) Ulrich likes video games and sausages. In fact, his preferences can be represented by $u(x, y) = \ln(x + 1) + y$ where x is the number of video games he plays and y is the number of dollars that he spends on sausages. Let p_x be the price of a video game and m be his income.

(a) Write an expression that says that Ulrich's marginal rate of substitution equals the price ratio. (Hint: Remember Donald Fribble from Chapter 6?)______.

(b) Since Ulrich has ______ preferences, you can solve this equation alone to get his demand function for video games, which is ______ ______ His demand function for the dollars to spend on sausages is

______.

(c) Video games cost \$.25 and Ulrich's income is \$10. Then Ulrich demands ______ video games and ______ dollars' worth of sausages. His utility from this bundle is ______ (Round off to two decimal places.)

(d) If we took away all of Ulrich's video games, how much money would he need to have to spend on sausages to be just as well-off as before?

______.

____

(e) Now an amusement tax of \$.25 is put on video games and is passed on in full to consumers. With the tax in place, Ulrich demands ________ video game and _______ dollars' worth of sausages. His utility from this bundle is __________ (Round off to two decimal places.)

(f) Now if we took away all of Ulrich's video games, how much money would he have to have to spend on sausages to be just as well-off as with the bundle he purchased after the tax was in place?____________________.

(g) What is the change in Ulrich's consumer surplus due to the tax? __________ How much money did the government collect from Ulrich by means of the tax?____.

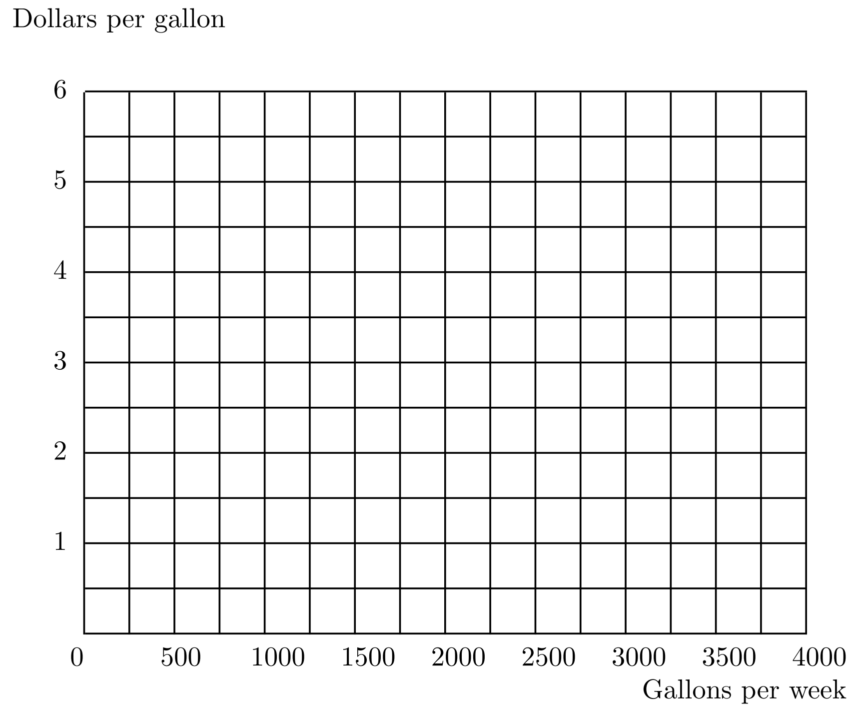
14.7 (1) Lolita, an intelligent and charming Holstein cow, consumes only two goods, cow feed (made of ground corn and oats) and hay. Her preferences are represented by the utility function $U(x, y) = x - x^2/2 + y$, where x is her consumption of cow feed and y is her consumption of hay. Lolita has been instructed in the mysteries of budgets and optimization and always maximizes her utility subject to her budget constraint. Lolita has an income of \$$m$ that she is allowed to spend as she wishes on cow feed and hay. The price of hay is always \$1, and the price of cow feed will be denoted by p, where $0 < p \leq 1$.

(a) Write Lolita's inverse demand function for cow feed. (Hint: Lolita's utility function is quasilinear. When y is the numeraire and the price of x is p, the inverse demand function for someone with quasilinear utility $f(x) + y$ is found by simply setting $p = f'(x)$.)________________________.

(b) If the price of cow feed is p and her income is m, how much hay does Lolita choose? (Hint: The money that she doesn't spend on feed is used to buy hay.)____.

(c) Plug these numbers into her utility function to find out the utility level that she enjoys at this price and this income.______________________.

(d) Suppose that Lolita's daily income is \$3 and that the price of feed is \$.50. What bundle does she buy?_______________ What bundle would she buy if the price of cow feed rose to \$1?____________________________________.



15.2 (0) For each of the following demand curves, compute the inverse demand curve.

(a) $D(p) = \max\{10 - 2p, 0\}$.______________________________.

(b) $D(p) = 100/\sqrt{p}$.______________________________.

(c) $\ln D(p) = 10 - 4p$.______________________________.

(d) $\ln D(p) = \ln 20 - 2 \ln p$.______________________________.

15.3 (0) The demand function of dog breeders for electric dog polishers is $q_b = \max\{200-p, 0\}$, and the demand function of pet owners for electric dog polishers is $q_o = \max\{90 - 4p, 0\}$.

(a) At price p, what is the price elasticity of dog breeders' demand for electric dog polishers? ________________ What is the price elasticity of pet owners' demand?______________________________.

(b) At what price is the dog breeders' elasticity equal to -1? ________

At what price is the pet owners' elasticity equal to -1?__________.

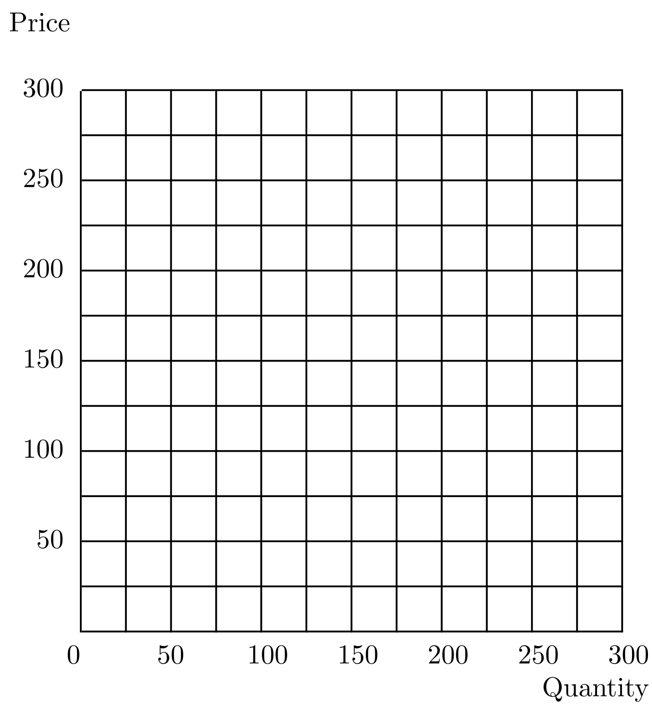
(c) On the graph below, draw the dog breeders' demand curve in blue ink, the pet owners' demand curve in red ink, and the market demand curve in pencil.

(d) Find a nonzero price at which there is positive total demand for dog polishers and at which there is a kink in the demand curve. ________

What is the market demand function for prices below the kink? ______

________ What is the market demand function for prices above the kink?____.

(e) Where on the market demand curve is the price elasticity equal to -1? ________ At what price will the revenue from the sale of electric dog polishers be maximized? ________ If the goal of the sellers is to maximize revenue, will electric dog polishers be sold to breeders only, to pet owners only, or to both?__________________________.



15.4 (0) The demand for kitty litter, in pounds, is $\ln D(p) = 1{,}000 - p + \ln m$, where p is the price of kitty litter and m is income.

(a) What is the price elasticity of demand for kitty litter when $p = 2$ and $m = 500$? __________ When $p = 3$ and $m = 500$? __________ When $p = 4$ and $m = 1{,}500$? __________.

(b) What is the income elasticity of demand for kitty litter when $p = 2$ and $m = 500$? __________ When $p = 2$ and $m = 1{,}000$? __________ When $p = 3$ and $m = 1{,}500$? __________.

(c) What is the price elasticity of demand when price is p and income is m? __________ The income elasticity of demand? __________.

15.5 (0) The demand function for drangles is $q(p) = (p+1)^{-2}$.

(a) What is the price elasticity of demand at price p? __________.

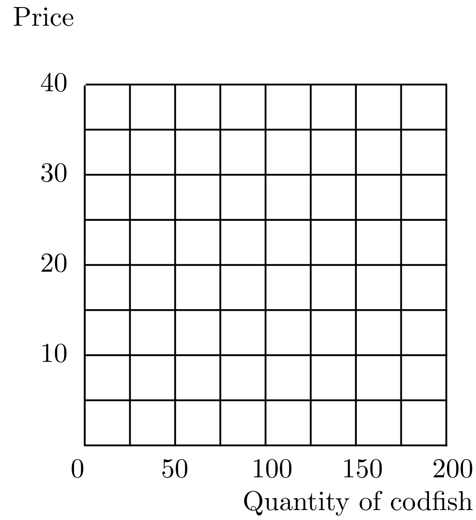
(b) At what price is the price elasticity of demand for drangles equal to -1? __________.

(c) Write an expression for total revenue from the sale of drangles as a function of their price. __________ Use calculus to find the revenue-maximizing price. Don't forget to check the second-order condition. __________.

(d) Suppose that the demand function for drangles takes the more general form $q(p) = (p+a)^{-b}$ where $a > 0$ and $b > 1$. Calculate an expression for the price elasticity of demand at price p. __________ At what price is the price elasticity of demand equal to -1? __________.

15.6 (0) Ken's utility function is $u_K(x_1, x_2) = x_1 + x_2$ and Barbie's utility function is $u_B(x_1, x_2) = (x_1 + 1)(x_2 + 1)$. A person can buy 1 unit of good 1 or 0 units of good 1. It is impossible for anybody to buy fractional units or to buy more than 1 unit. Either person can buy any quantity of good 2 that he or she can afford at a price of $1 per unit.

(a) On the graph below, use blue ink to draw the demand curve and the supply curve. The equilibrium market price is ______ and the equilibrium quantity sold is ______________________________.



(b) A quantity tax of $2 per unit sold is placed on salted codfish. Use red ink to draw the new supply curve, where the price on the vertical axis remains the price per unit paid by demanders. The new equilibrium price paid by the demanders will be ______ and the new price received by the suppliers will be ________ The equilibrium quantity sold will be

____.

(c) The deadweight loss due to this tax will be __________ On your graph, shade in the area that represents the deadweight loss.

16.5 (0) The demand function for merino ewes is $D(P) = 100/P$, and the supply function is $S(P) = P$.

(a) What is the equilibrium price?______________________.

(b) What is the equilibrium quantity?____________________.

(c) An ad valorem tax of 300% is imposed on merino ewes so that the price paid by demanders is four times the price received by suppliers. What is the equilibrium price paid by the demanders for merino ewes now?

__________ What is the equilibrium price received by the suppliers for merino ewes? ______ What is the equilibrium quantity?____________.

16.6 (0) Schrecklich and LaMerde are two justifiably obscure nineteenth-century impressionist painters. The world's total stock of paintings by Schrecklich is 100, and the world's stock of paintings by LaMerde is 150. The two painters are regarded by connoisseurs as being very similar in style. Therefore the demand for either painter's work depends both on its own price and the price of the other painter's work. The demand function for Schrecklichs is $D_S(P) = 200 - 4P_S - 2P_L$, and the demand function for LaMerdes is $D_L(P) = 200 - 3P_L - P_S$, where P_S and P_L are respectively the price in dollars of a Schrecklich painting and a LaMerde painting.

(a) Write down two simultaneous equations that state the equilibrium condition that the demand for each painter's work equals supply.

____.

(b) Solving these two equations, one finds that the equilibrium price of Schrecklichs is ________ and the equilibrium price of LaMerdes is______.

(c) On the diagram below, draw a line that represents all combinations of prices for Schrecklichs and LaMerdes such that the supply of Schrecklichs equals the demand for Schrecklichs. Draw a second line that represents those price combinations at which the demand for LaMerdes equals the supply of LaMerdes. Label the unique price combination at which both markets clear with the letter E.