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 ≤* 1.

*(a)* Write Lolita’s inverse demand function for cow feed.

*(b)* If the price of cow feed is *p* and her income is *m*, how much hay does

Lolita choose?

*(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?

**2.** F. Flintstone has quasi-linear preferences and his inverse demand

function for Brontosaurus Burgers is *P*(*b*) = 30 *−* 2*b*. Mr. Flintstone is

currently consuming 10 burgers at a price of 10 dollars.

*(a)* How much money would he be willing to pay to have this amount

rather than no burgers at all? What is his level of (net)

consumer’s surplus?

*(b)* The town of Bedrock, the only supplier of Brontosaurus Burgers,

decides to raise the price from $10 a burger to $14 a burger. What

is Mr. Flintstone’s change in consumer’s surplus?