Econ HW 2

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1. Aggregate Demand, Supply, and Surplus

High income demand curve:
$Price = (23.3914418) - (1.2966378 \times 10^{-4})Q$

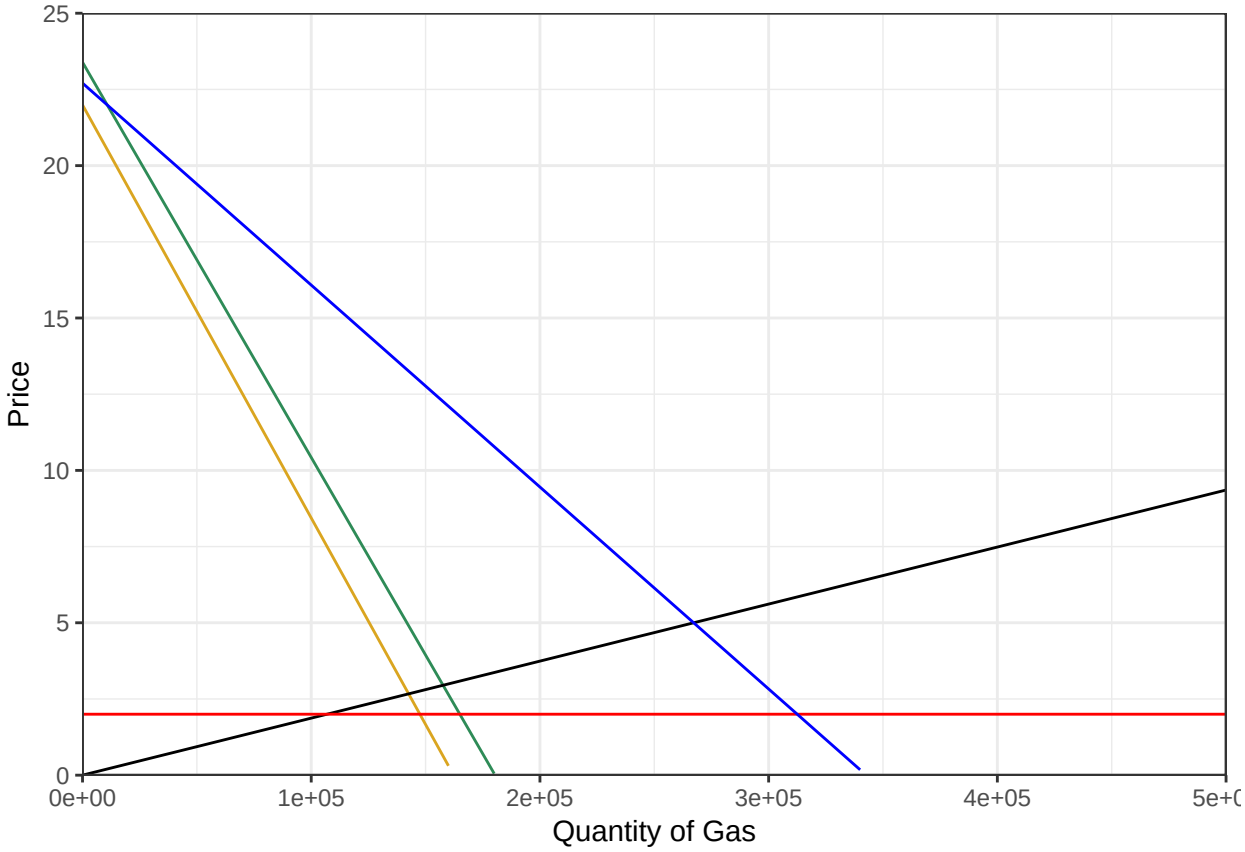
Low income demand curve:
$Price = (21.9908534) - (1.3551741 \times 10^{-4})Q$

a. Find aggregate demand

Aggregate demand curve:
$Price = (22.7066059) - (6.6262994 \times 10^{-5})Q$

b. Find the supply curve

Supply curve:
$Price = (1.8711376 \times 10^{-5}) * Q$



c. Surplus under the status quo

Consumers:
$CS = (2.3694528 \times 10^6)$

Producers:
$PS = (6.6804279 \times 10^5)$

d. Environmental Cost under the Status Quo

$Environmental\ Cost = (5.3443423 \times 10^5)$

2. Division of Consumer Benefit

Consumer Surplus for High Income
$CS_{High} = (1.3043162 \times 10^6)$

Consumer Surplus for Low Income
$CS_{Low} = (1.0651366 \times 10^6)$

3. Implement a Gas Tax of $0.50/gallon

a. New quantity of gasoline

$Q_{Tax} = (2.6133299 \times 10^5)$

b. New price of gasoline

$P_{Tax} = (5.3898999)$

c. Surplus to high income consumers

$CS_{High} = (1.2495992 \times 10^6)$

d. Surplus to low income consumers

$CS_{Low} = (1.0168127 \times 10^6)$

e. Producer surplus

$PS_{Tax} = (6.3894607 \times 10^5)$

f. Environmental damage

$TEC_{Tax} = (5.2266597 \times 10^5)$

g. Tax revenue

$Tax\ Revenue = (1.3066649 \times 10^5)$

4. Tax Revenues for Infrastructure Repairs

a. Surplus to high income consumers

b. Surplus to low income consumers

c. Surplus to producers

Tax Amount (USD)	Tax Revenue (USD)	Welfare Change Low Income (%)	Welfare Change High Income (%)	Welf
0.25	66068.76	-0.490	0.006	
1.75	431589.67	-0.428	0.033	
3.25	744153.44	-0.381	0.048	
5.00	1041879.21	-0.344	0.049	

5. Electric cars lower demand for each group by one half (vertically)

a. & b. Gas consumption by High/Low income Consumers

c. New price of gasoline with higher EV use and lower gas demand

d. Environmental Cost

6. Compare a 2.00 per gal tax to the influence of EV