

■ Section 2.4

```
Off[General::spell];
Off[General::spell1];
```

■ 2.8 Detour; Benefit Calculations

■ Linear

```
p = .;
w = .;
q0 = 35000.;
p0 = 3.;
elast = -0.5;
m = elast * q0 / p0;
b = q0 - m * p0;
wlin = m * p + b
plin = p /. Flatten[Simplify[Solve[w == %, p]]]
```

52500. - 5833.33 p

General::spell1 : Possible spelling error: new symbol name "plin" is similar to existing symbol "wlin".

9. - 0.000171429 w

■ LogLinear

```
c = q0 / p0^elast;
wlog = c * p^elast
plog = p /. Flatten[Simplify[Solve[w == %, p]]]
```

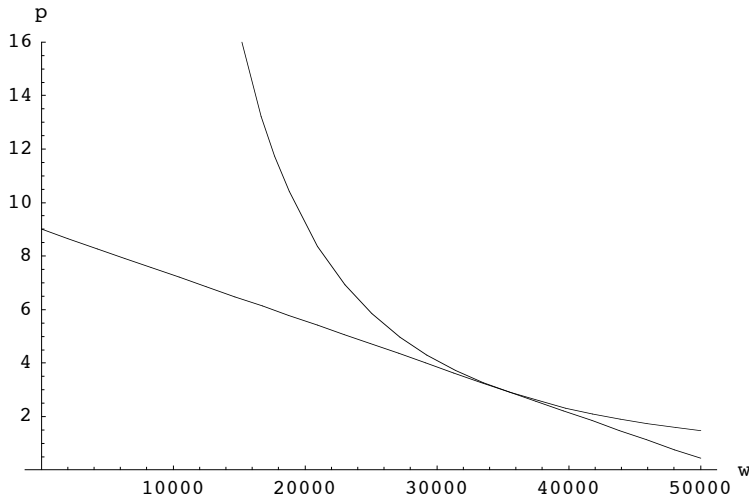
$$\frac{60621.8}{p^{0.5}}$$

General::spell1 : Possible spelling error: new symbol name "plog" is similar to existing symbol "wlog".

$$\frac{3.675 \times 10^9}{w^2}$$

■ Plot and NB

```
pl28i = Plot[{plin, plog}, {w, 0, q0 * 50 / 35},
  AxesLabel -> {w, p},
  PlotRange -> {0, 16}, DisplayFunction -> $DisplayFunction]
```



- Graphics -

■ Total Benefits

$$\int_0^{q_0} \text{plin} \, dw$$

210000.

$$\int_0^{q_0} \text{plog} \, dw$$

Integrate::idiv : Integral of $\frac{1}{w^2}$ does not converge on {0, 35000.}.

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$$3.675 \times 10^9 \int_0^{35000.} \frac{1}{w^2} \, dw$$

■ Gross Loss

$$\int_{0.8+q_0}^{q_0} \text{plin} \, dw$$

25200.

$$\int_{0.8+q_0}^{q_0} \text{plog} \, dw$$

26250.

■ Net Loss

$$\int_{0.75 \cdot q_0}^{q_0} (p_{lin} - 3) \, dw$$

6562.5

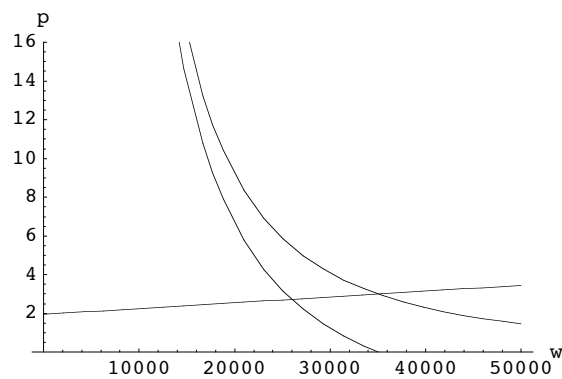
$$\int_{0.75 \cdot q_0}^{q_0} (p_{log} - 3) \, dw$$

8750.

■ 2.9 MNB

```
mc = 1.95 + 0.00003 * w;
mnblog = plog - mc
pl29i = Plot[{mc, plog, mnblog}, {w, 0, q0 * 50 / 35},
  AxesLabel -> {w, p},
  PlotRange -> {0, 16}, DisplayFunction -> $DisplayFunction]
```

$$-1.95 + \frac{3.675 \times 10^9}{w^2} - 0.00003 w$$



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