Example 5.1

```
Off[General::spell];
Off[General::spell1];
SetOptions[Plot, DefaultFont → {"Times", 10}];
```

■ Get Demand Function (2 forms) and Plot

Enter Elasticity and a Demand Point;

```
elast = -0.3;
pbase = 2889.;
qbase = 180;
```

■ Calculate linear and log parameters

```
slope = elast * qbase / pbase;
incpt = qbase - slope * pbase;
const = qbase / (pbase ^ elast);
```

■ Linear (q form given first, then inverted for p (mb) form)

```
qlin = slope * plin + incpt
```

$$234. - 0.0186916\,\text{plin}$$

```
mblin = plin /. (Flatten[Simplify[Solve[q == qlin, plin]]])
```

$$12519. - 53.5\,q$$

```
qlin /. plin → 3033.33333
```

$$177.302$$

■ Log (q form given first, then inverted for p (mb) form)

```
qlog = const * plog ^ elast
```

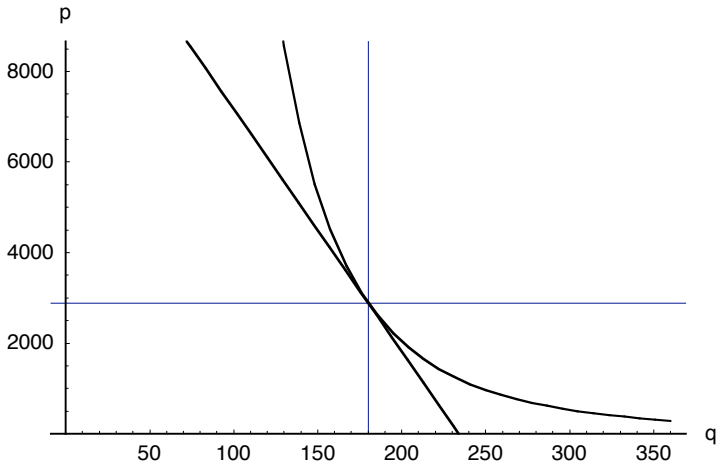
$$\frac{1965.61}{\text{plog}^{0.3}}$$

```
mblog = Simplify[(q / const) ^ (1 / elast)]
```

$$\frac{9.51311 \times 10^{10}}{q^{3.33333}}$$

■ Plot Both Functions

```
Plot[{mblin, mblog}, {q, 0, 2 * qbase},
 PlotRange → {0, 3 * pbase},
 AxesLabel → {"q", "p"},
 GridLines → {{qbase}, {pbase}}
]
```




```
- Graphics -
```

■ Copy/Paste Demand Function from above into integral

$$\int_{3033.3333}^{2888.8889} (234.` - 0.01869158878504673` * p)\, dp$$

```
-25805.3
```

```
qlin /. plin → 3033.33333
```

```
177.302
```