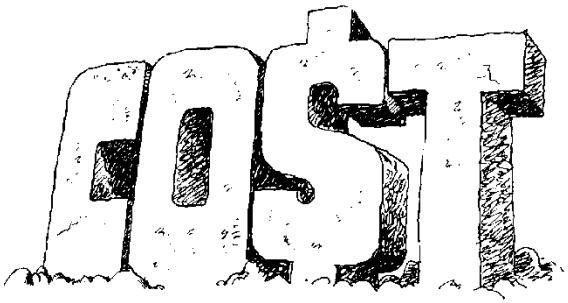
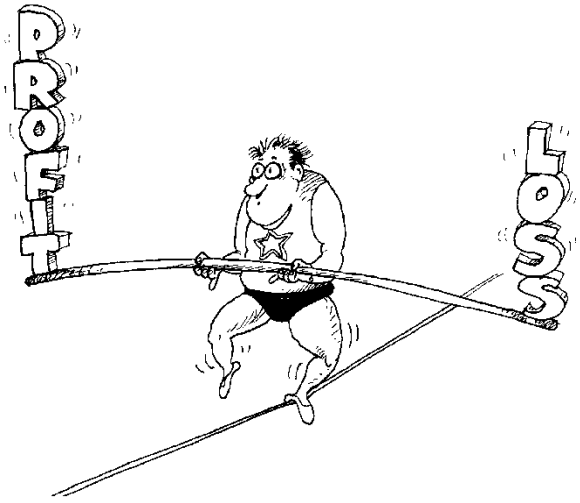
Break-Even Analysis

- TR=Total Revenue
- TFC=Total Fixed Costs
- TVC=Total Variable Costs
- VC=Variable Cost Per Unit
- TC=Total Fixed Cost+Total Variable Costs
- TRM=Total Raw Material
- TDL=Total Direct Labor
- NP=Net Profit <Loss>

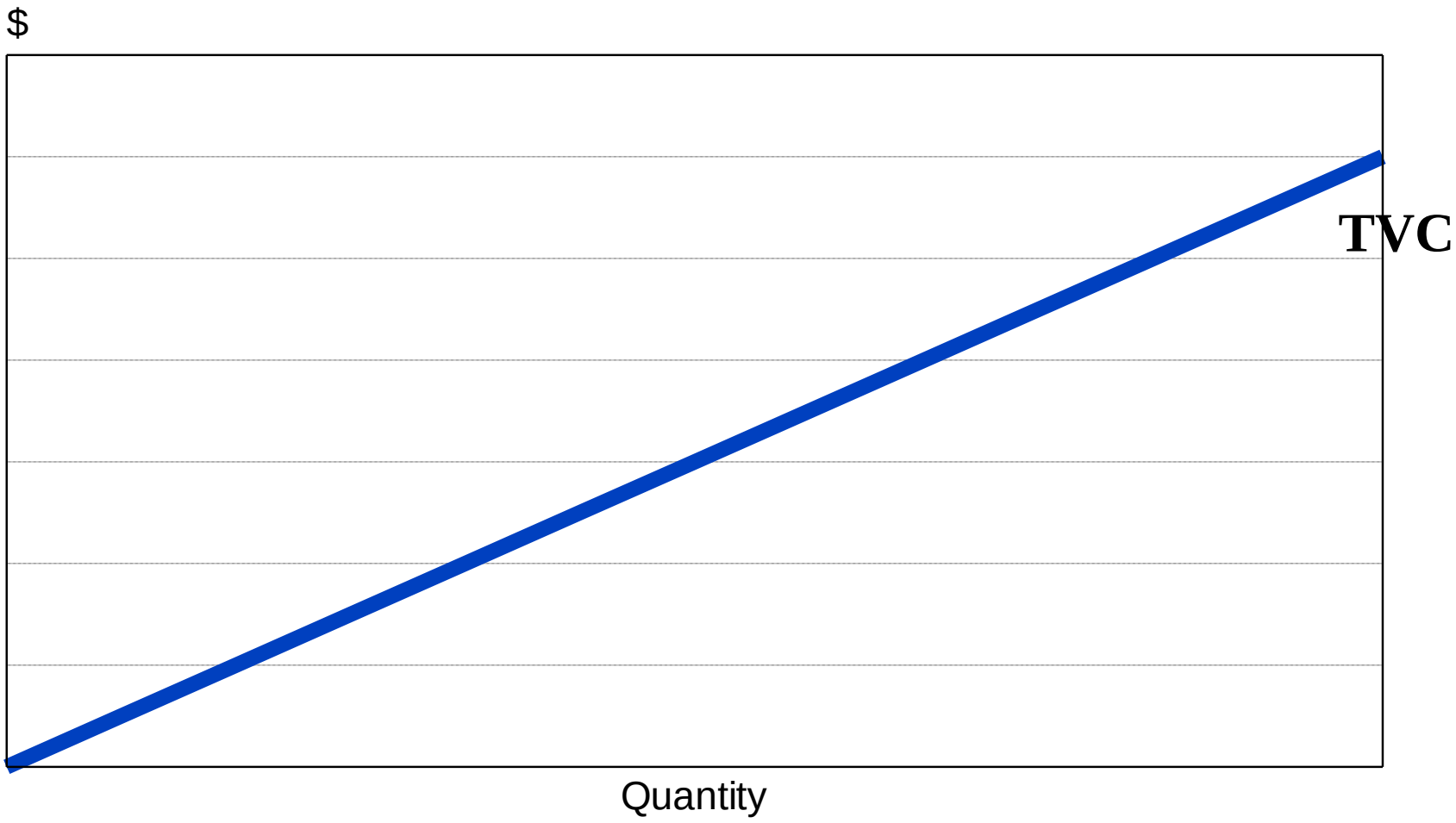
Cost Volume Profit Analysis

- Volume same as Total Revenue
  - Total Revenue=Quantity Sold Times Price
- Cost=Total Fixed Cost Plus Total Variable Cost
- Net Profit=Total Revenue Minus Total Costs

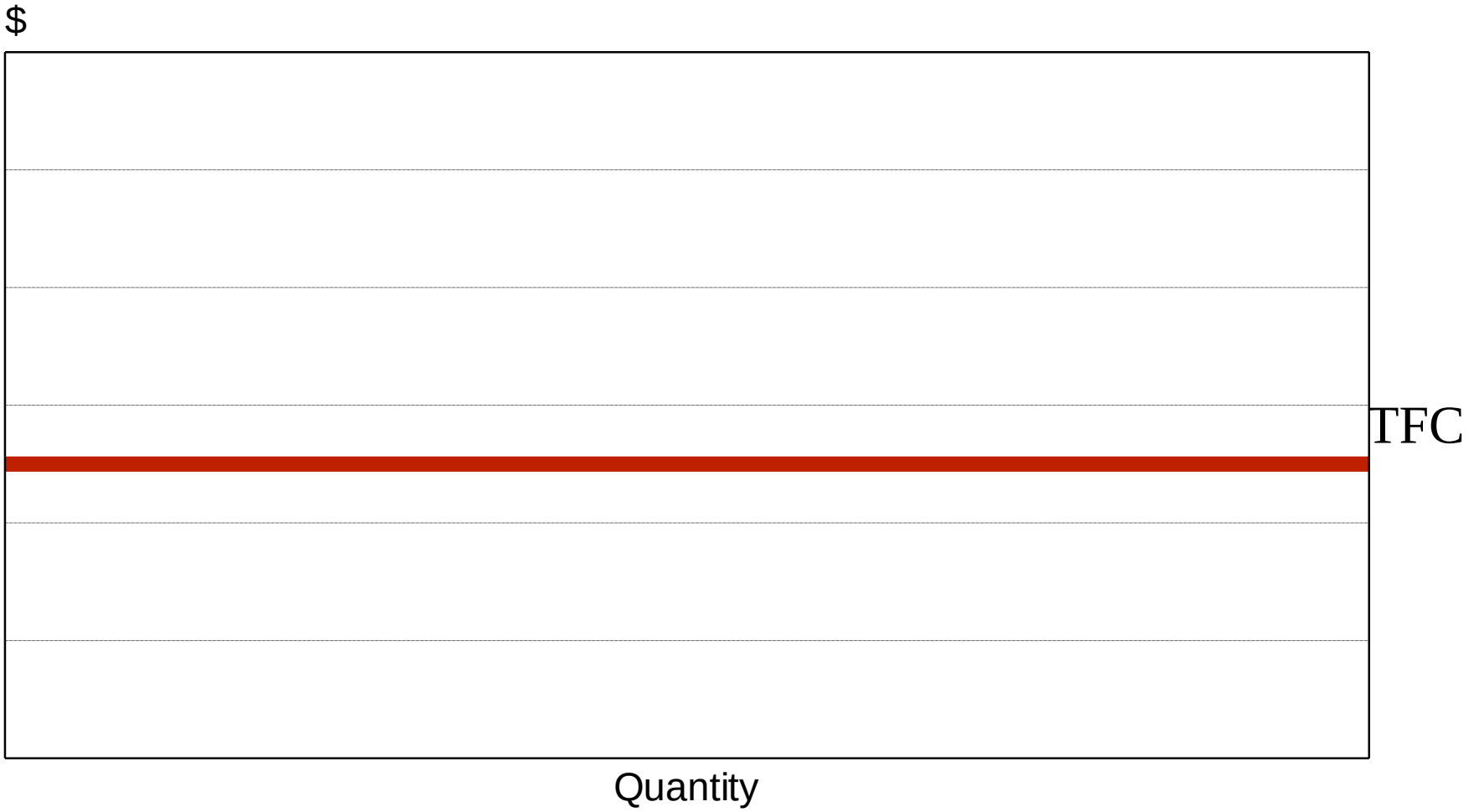




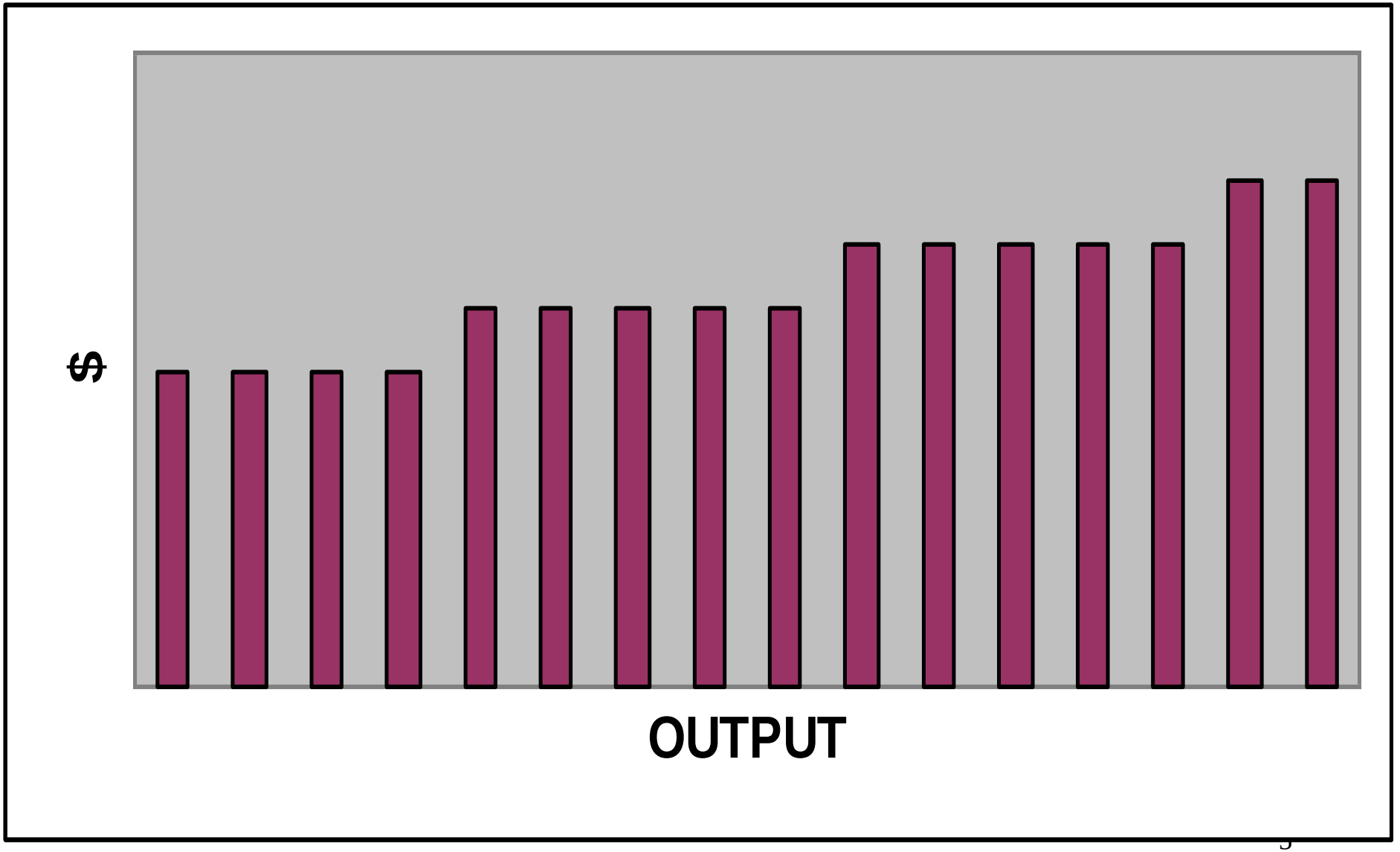
Total Variable Costs



Total Fixed Costs



Fixed Costs as a Stair-Step



Traditional Cost Oriented World

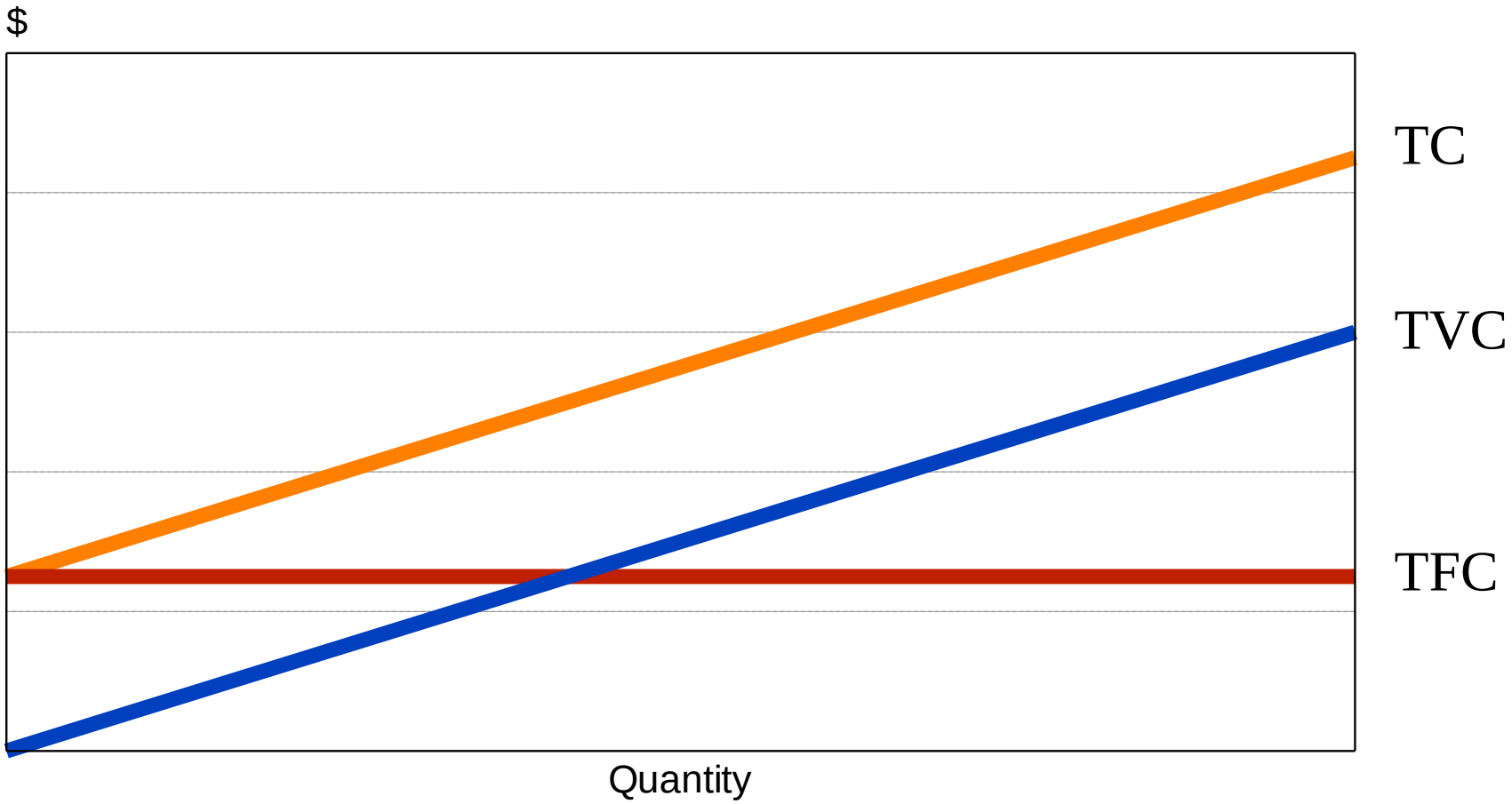
Fixed	Variable
Rent	Raw Material
Salaries	Direct Labor
Depreciation	Variable Factory Overhead
Property Taxes	
Most Expenses	

(TOC, JIT, TQM)

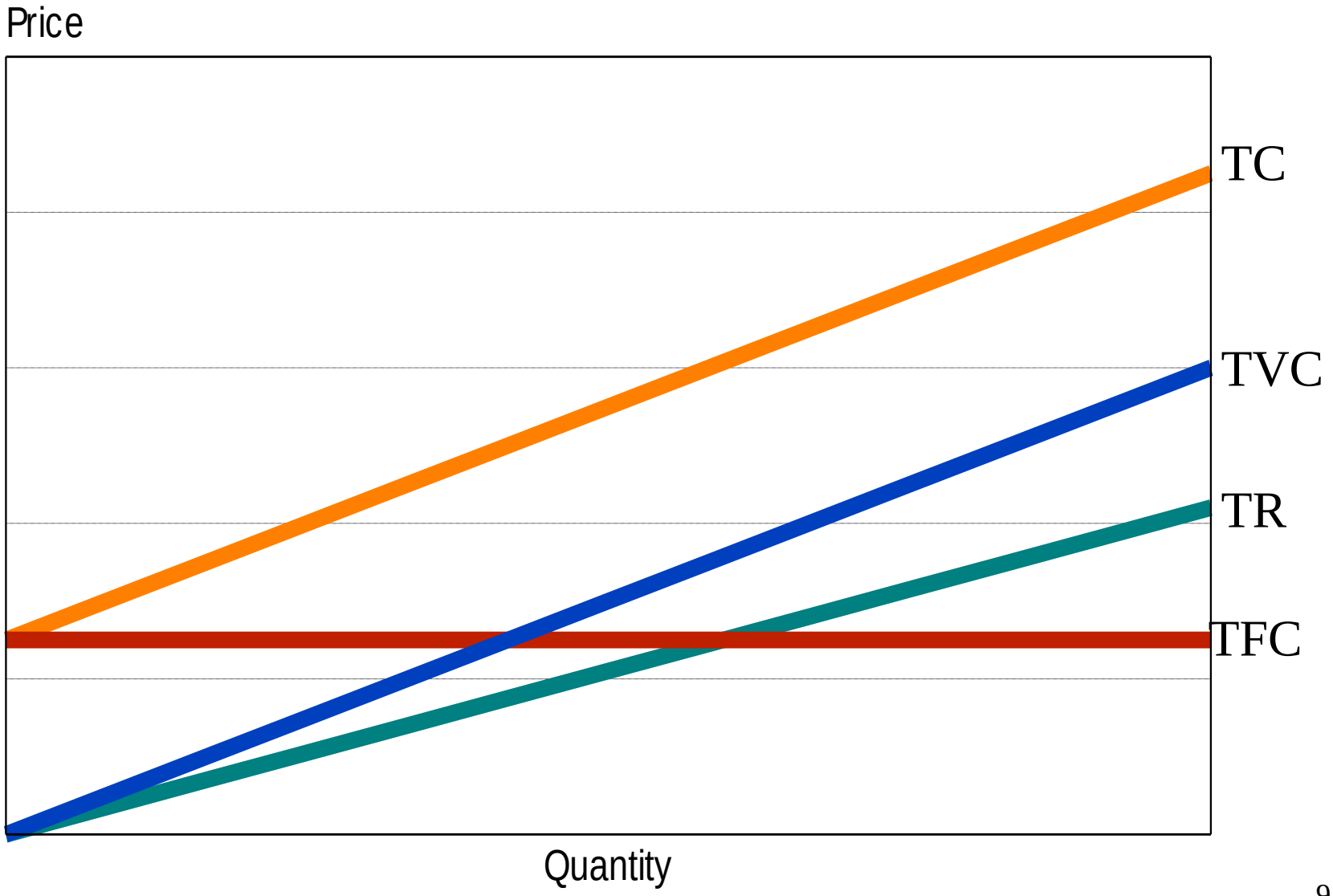
New Philosophies

Fixed	Variable
Salaries	Raw Material
Property Taxes	(maybe the only variable)
Depreciation	(according to the New Philosophies)
Rent	
Direct Labor	
Most Expenses	

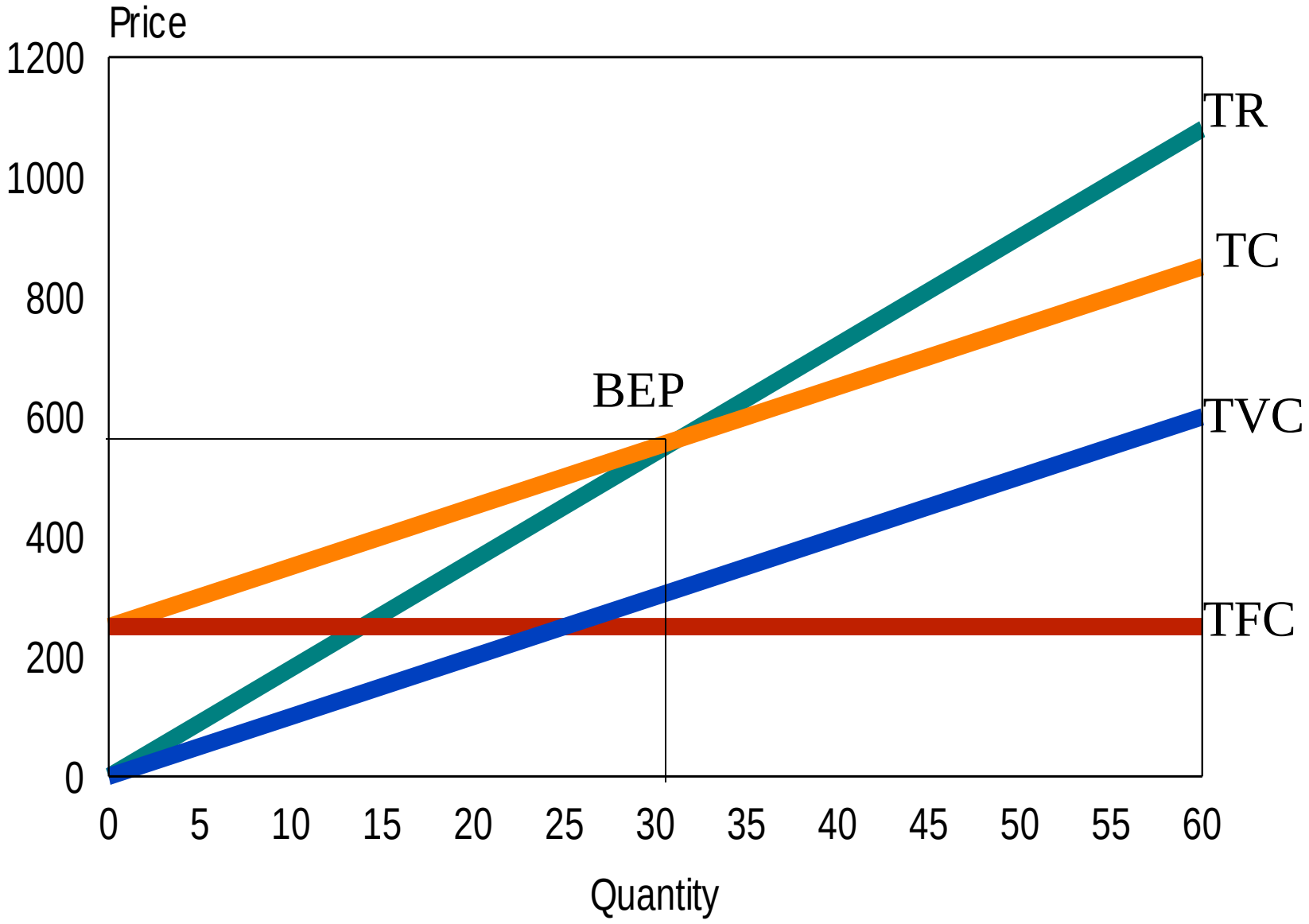
Total Costs



Price < Variable Cost



Price > Variable Cost



TFC=6000

VC=5

P=8

- TR
- TVC
- CONTRIBUTION (TR-TVC)
- TFC
- NP (TR- TVC - TFC)

- OUTPUT =1,500
- 12,000
- 7,500
- 4,500
- 6,000
- <1,500>

Profit Analysis

TFC=6000
VC=5
P=8

- TR
- TVC
- CONTRIBUTION (TR-TVC)
- TFC
- NP (TR - TVC - TFC)

- OUTPUT =2,000
- 16,000
- 10,000
- 6,000
- 6,000
- 0 (Break Even)

Breaking Even

TFC=6000
VC=5
P=8

- TR
- TVC
- CONTRIBUTION (TR-TVC)
- TFC
- NP (TR – TVC - TFC)

- OUTPUT =2,500
- 20,000
- 12,500
- 7,500
- 6,000
- 1,500

Break Even Formula

- **BEP=TFC/(P-VC) (UNITS)**
  =6,000/(8-5) **TFC/(P-VC)**
  =2,000 units
  In $ = 2,000 units times $8
  =$16,000
- **Margin of Safety=**
  Sales (Actual or Expected)–Break Even
- If Sales =2,400 units
  Margin of Safety =
  2,400 -2,000 =400 units

Case Study

- TFC=90,000
- TVC=192,000
- units sold=12,000
- VC Per Unit=16
- Price=20
- Total Revenue=240,000 (12,000*20)
- Loss=TR-(TVC+TFC)

  = 240,000 - (192,000+90,000)

  = $42,000

BEP

What is the current break-even point?

TFC/(PRICE-VC PER UNIT)
=90,000/(20-16) = 22,500

Lower Fixed Cost ??????

REDUCE FIXED COST

FC'=TR-TVC

= 240,000-192,000

= 48,000

Reduce Variable Costs

VC'=(TR-TFC)/QTY

=(240,000-90,000)/12,000

=$12.50

Raise the Price

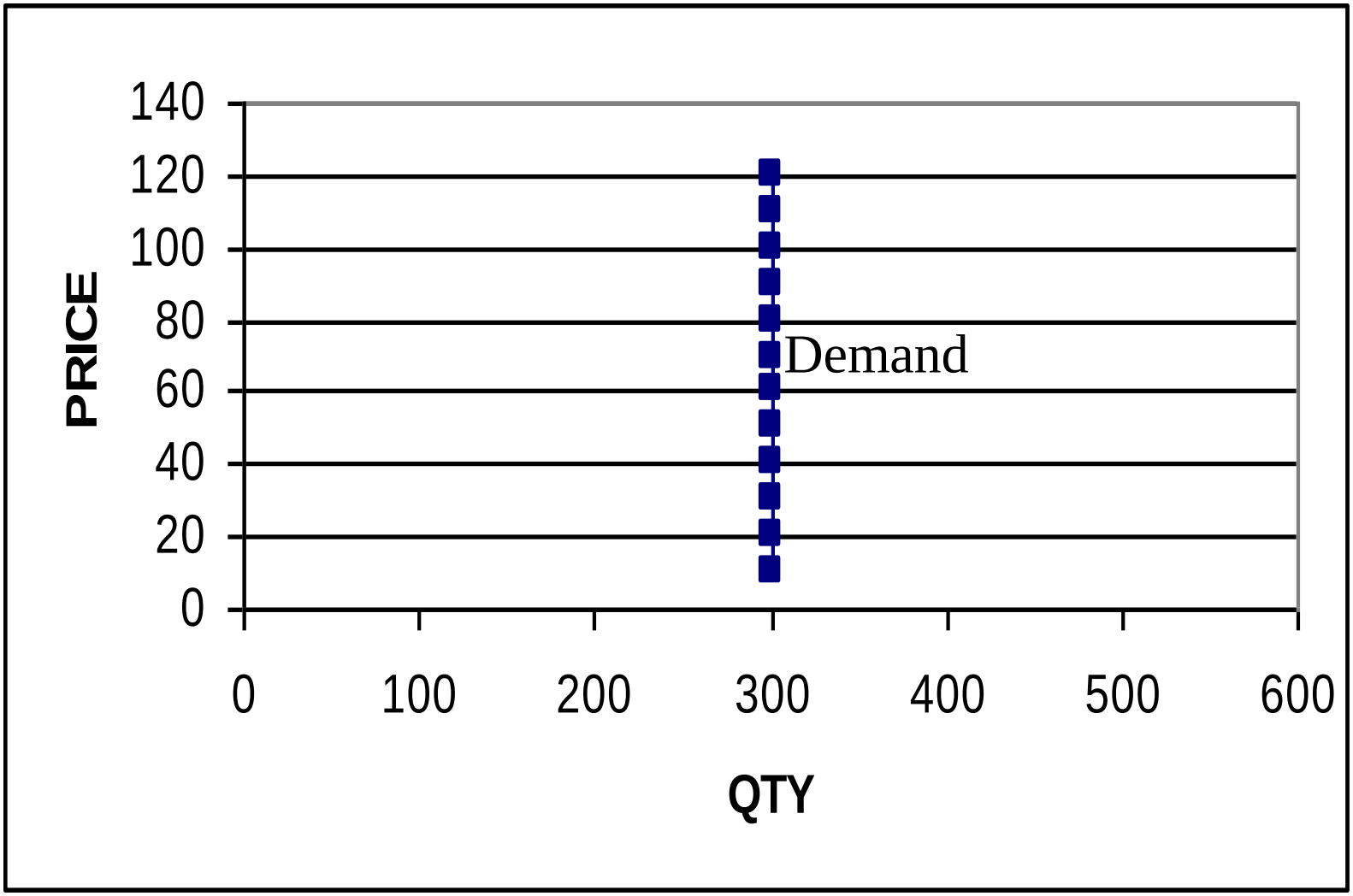
P'=VC+(FC/QTY)

=16+(90,000/12,000)

=16+7.5

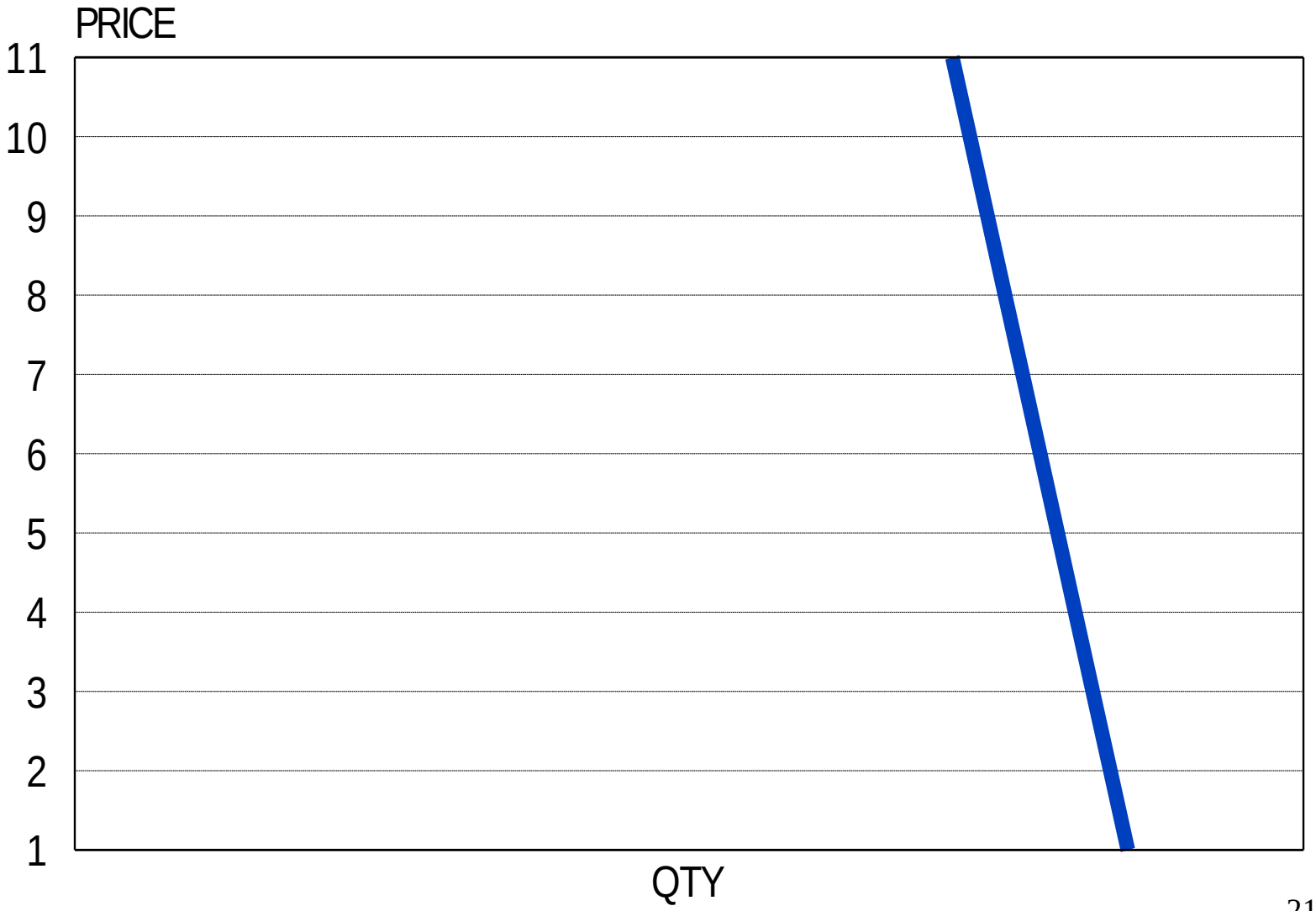
=$23.50

Perfectly Inelastic Demand



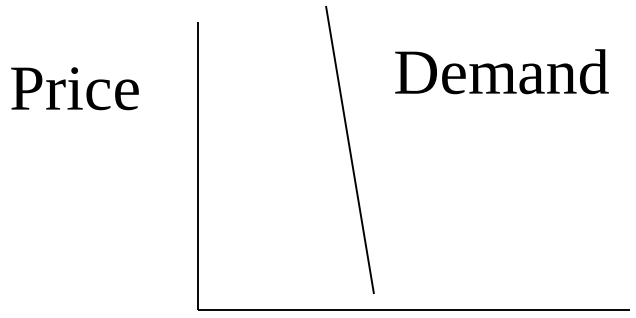
Price Does Not Matter At All

Relatively Inelastic Demand

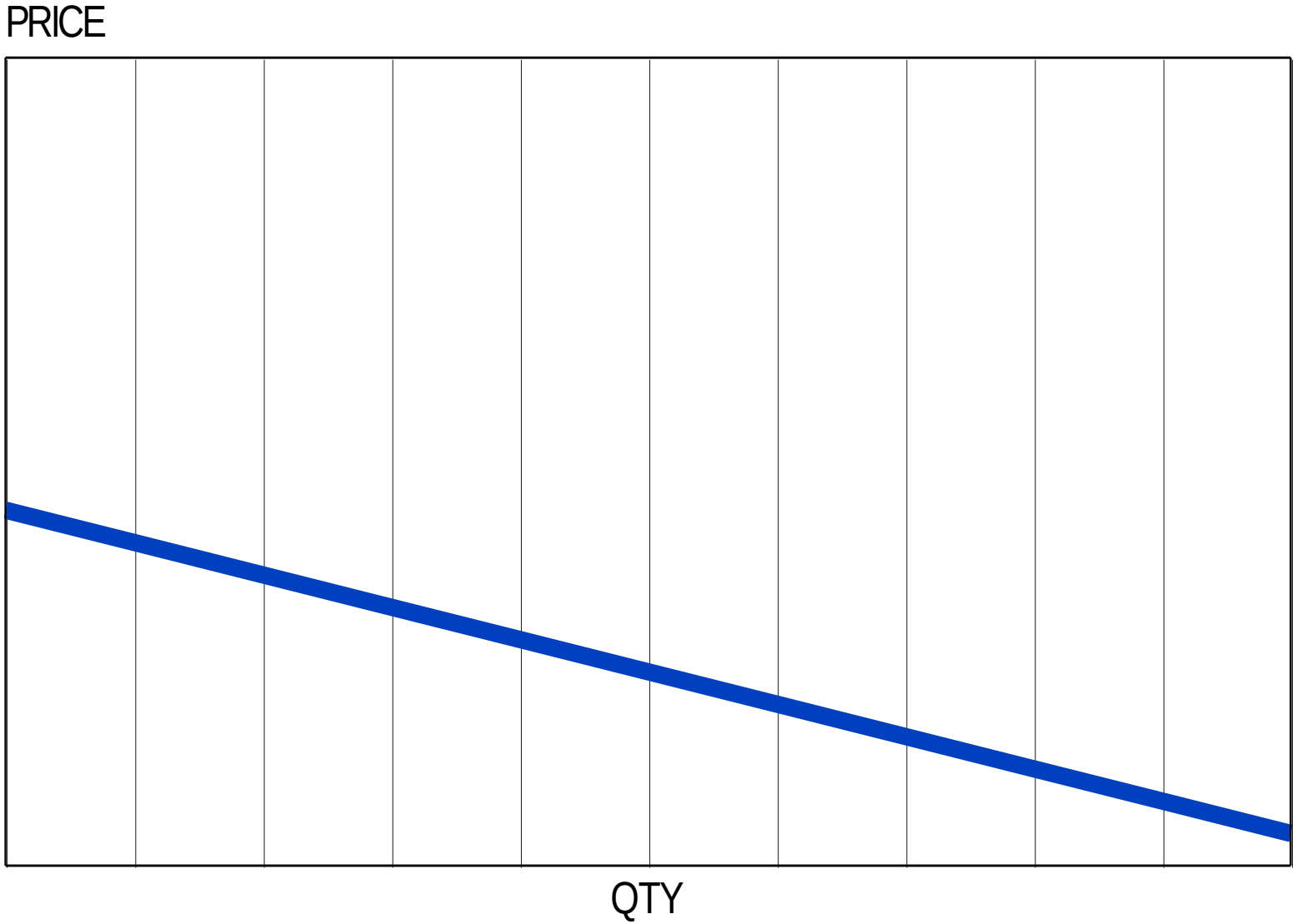


Inelastic Demand

- Price Does **NOT** Matter (Much)
- Change in Price Results in a Relatively Small Change in Quantity Demanded
- Price Increase -- Increase Total Revenue
- Price Decrease -- Decrease Total Revenue

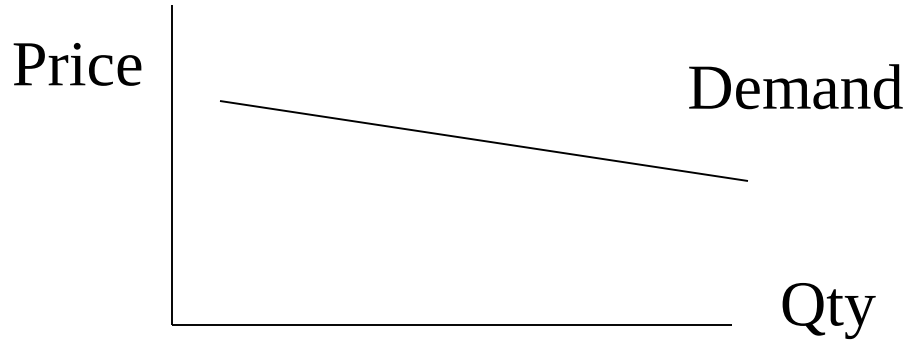


Elastic Demand Curve

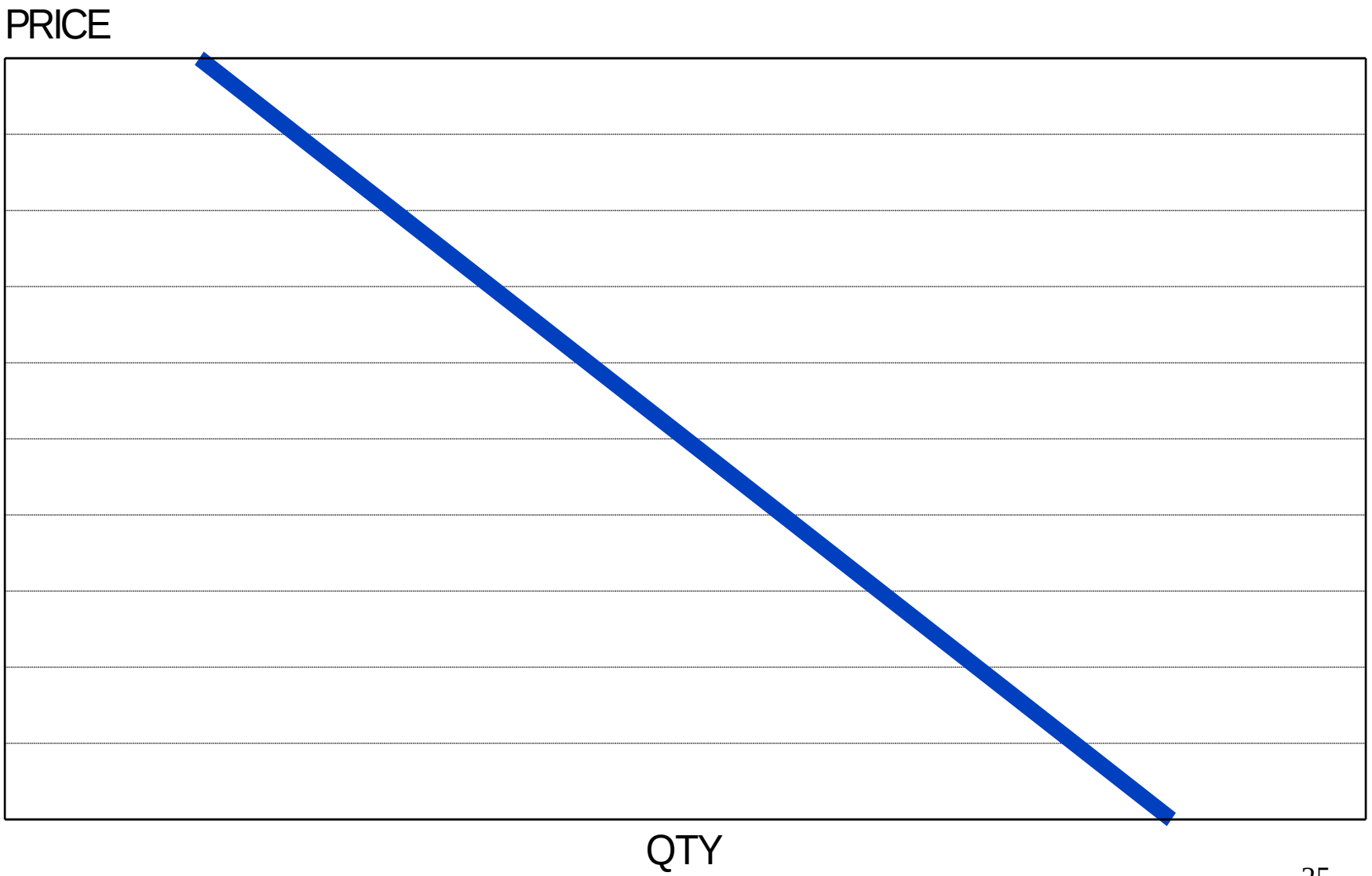


Elastic Demand

- Price **DOES** Matter
- Change in Price Results in a Relatively Large Change in Quantity Demanded
- Price Increase -- Decrease Total Revenue
- Price Decrease -- Increase Total Revenue



Unit Elastic Demand



Unit Elastic Demand Curve

- Change in Price in Either Direction
- No Change in Total Revenue
- Increase in Price Equally Offset by Decrease in Quantity Demanded
- Decrease in Price Equally Offset
- by Increase in Quantity Demanded