

Name:

(x, p) unit price in \$
(qty in 100's)

MATH 1324 Quiz

Covers Supply/Demand

SHOW ALL WORK. JUSTIFY ALL ANSWERS.

Given x represents the number of items in hundreds supplied or demanded each month, p represents the unit price of the items (in dollars), $p = s(x) = 3x + 52$ and $p = d(x) = -0.8x + 71$, answer the following.

(a) (2.5 points) At what price will consumers purchase 21 items? $d(x) = -0.8x + 71$

Find p $x = 21$

$$p = d(21) = -0.8(21) + 71 \quad \frac{21}{100} = .21$$

$$p = 70.832$$

At a price of \$70.83

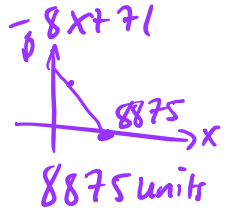
(b) (2.5 points) How many items will consumers purchase if the items are free?

$x = ?$ when $p = 0$

$$0 = -0.8x + 71$$

$$\frac{0.8x}{0.8} = \frac{71}{0.8}$$

$$x = 88.75 \Rightarrow \text{Multiply by 100.}$$



(c) (2.5 points) Producers will only provide the items if the price is above what value?

$$s(x) = 3x + 52$$

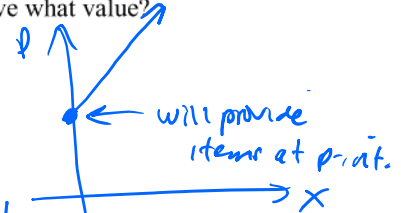
Given p-intercept plug in $x=0$:

Find p

$$s(0) = 3(0) + 52$$

$$= 52$$

Price needs to be above \$52 to supply items.



(d) (2.5 points) What is the equilibrium point? Include units.

$$s(x) = d(x)$$

$$3x + 52 = -0.8x + 71$$

$$+0.8x \quad +0.8x$$

$$3.8x + 52 = 71$$

$$-52 \quad -52$$

$$3.8x = 19$$

$$\frac{3.8x}{3.8} = \frac{19}{3.8}$$

$$x = 5$$

Plug in to either function

$$p = 3(5) + 52$$

$$p = 15 + 52$$

$$p = 67$$

(500 items, \$67)

