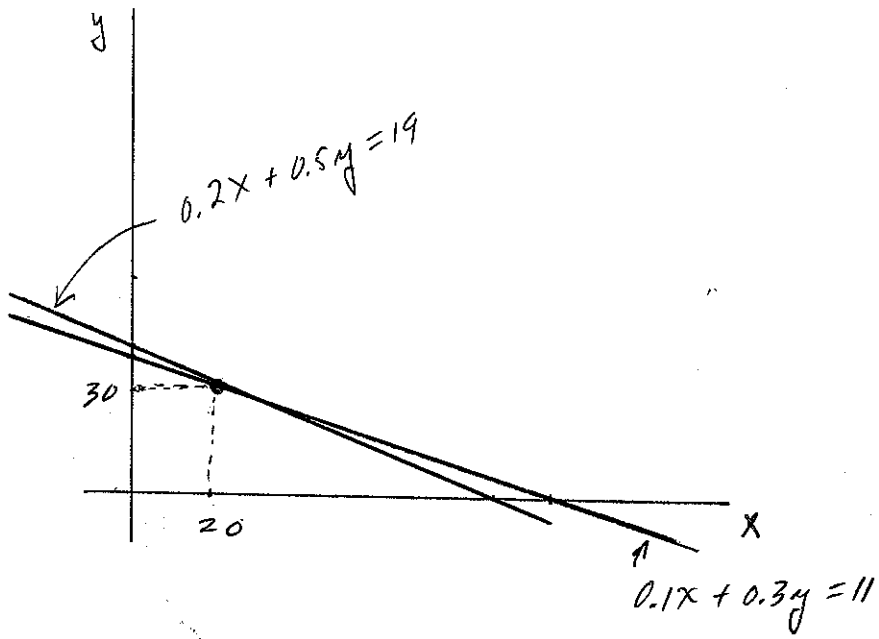
3.1 #12



$0.1x + 0.3y = 11$

$.1x = 11 - 0.3y$

$x = (110 - 3y)$

$0.2x + 0.5y = 19$

$0.2(110 - 3y) + 0.5y = 19$

$22 - 0.6y + 0.5y = 19$

$22 - 0.1y = 19$

$-0.1y = -3$

$y = 30$

$x = (110 - 3y)$ if $y = 30$

$x = 110 - 90 = 20$

So, our solution is ~~$x=20, y=30$~~.

3.1 #14

$P = 200 - 5Q$

$P = (60 + 2Q)$ $\Rightarrow$ $60 + 2Q = 200 - 5Q$

$7Q = 140$

$Q = 20$

$P = 60 + 2(20) = 100$

So, our solution is $P = 100, Q = 20$

check

$100 = 200 - 5(20)$ ✓

$100 = 60 + 2(20)$ ✓

3.1 #20

$x+y=12 \Rightarrow x=(12-y)$

$x-2y=18$

$(12-y)-2y=18$

$12-3y=18$

$-3y=6$

$y=-2$

$x+(-2)=12$

$x=14$

So, our solution is $x=14, y=-2$

Check

$14+-2=12$ ✓

$14-2(-2)=18$ ✓

3.1 #26

$-2x+5y=40$

$y=(0.4x+8)$

$-2x+5(0.4x+8)=40$

$2x+2x+40=40$

$40=40$

This system is dependent

3.1 #30

$12x+16y=120$

$y=(9.5x-0.75)$

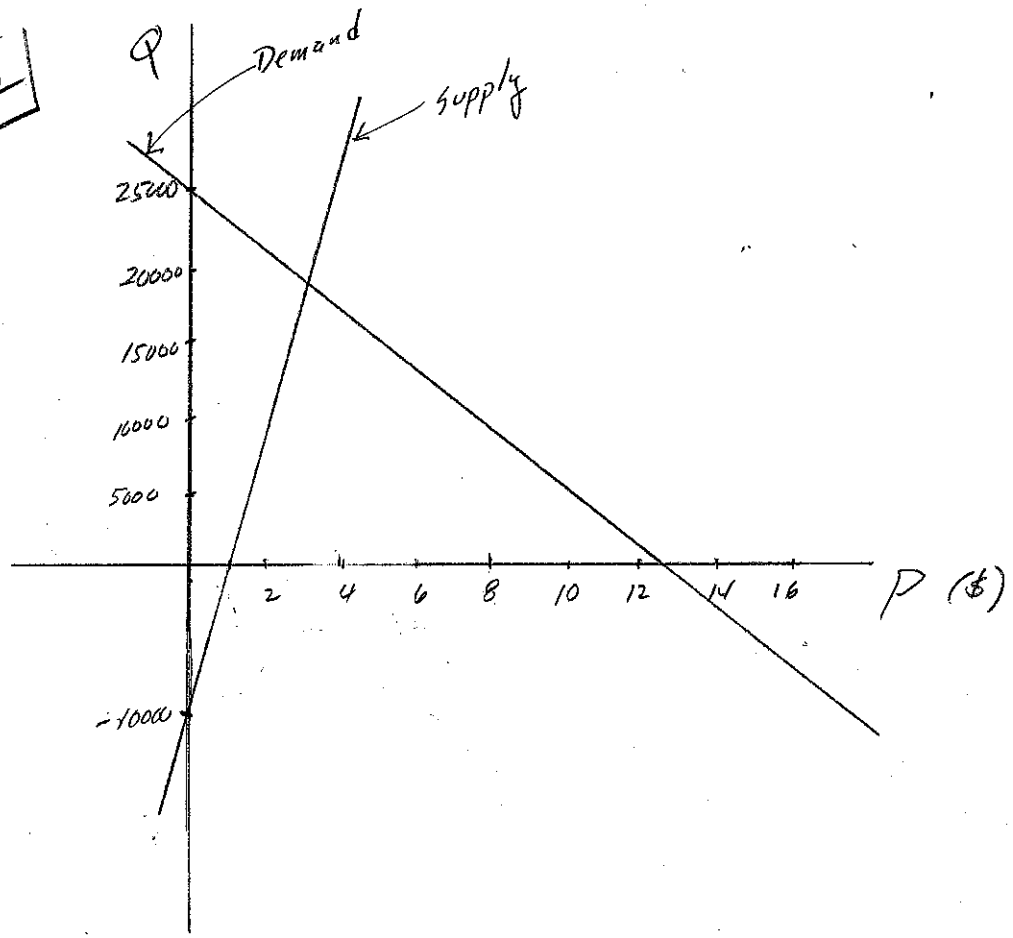
$12x+16(9.5x-0.75)=120$

$12x+152x-12=120$

$164x=132$

This system is consistent

3.1
#32



Supply = Demand $\Rightarrow$ $25{,}000 - 2{,}000P = -10{,}000 + 10{,}000P$

$35{,}000 = 12{,}000P$

$2.92 \approx P$

So, supply and demand will be equal when the price per pumpkin is about $2.92

3.1
#38

Let a = the number of adult tickets sold
c = the number of child's tickets sold

$a + c = 400$ (number of tickets sold)
$4a + 1.5c = 900$ (ticket revenue in dollars)

Assuming no theft

Solve $a = 400 - c$

$4(400 - c) + 1.5c = 900$

$1600 - 4c + 1.5c = 900$

$-2.5c = -700$

$c = 280$

$a = 120$

In case of no theft there were 280 adults and 120 children attending. In this case the ratio of children to adults attending is $\frac{280}{120}$ or $\frac{7}{3}$. This is a greater ratio of children to adults than the commissioner's estimates. So, if the commissioner's estimate is good, then there may well be a justification for an investigation.