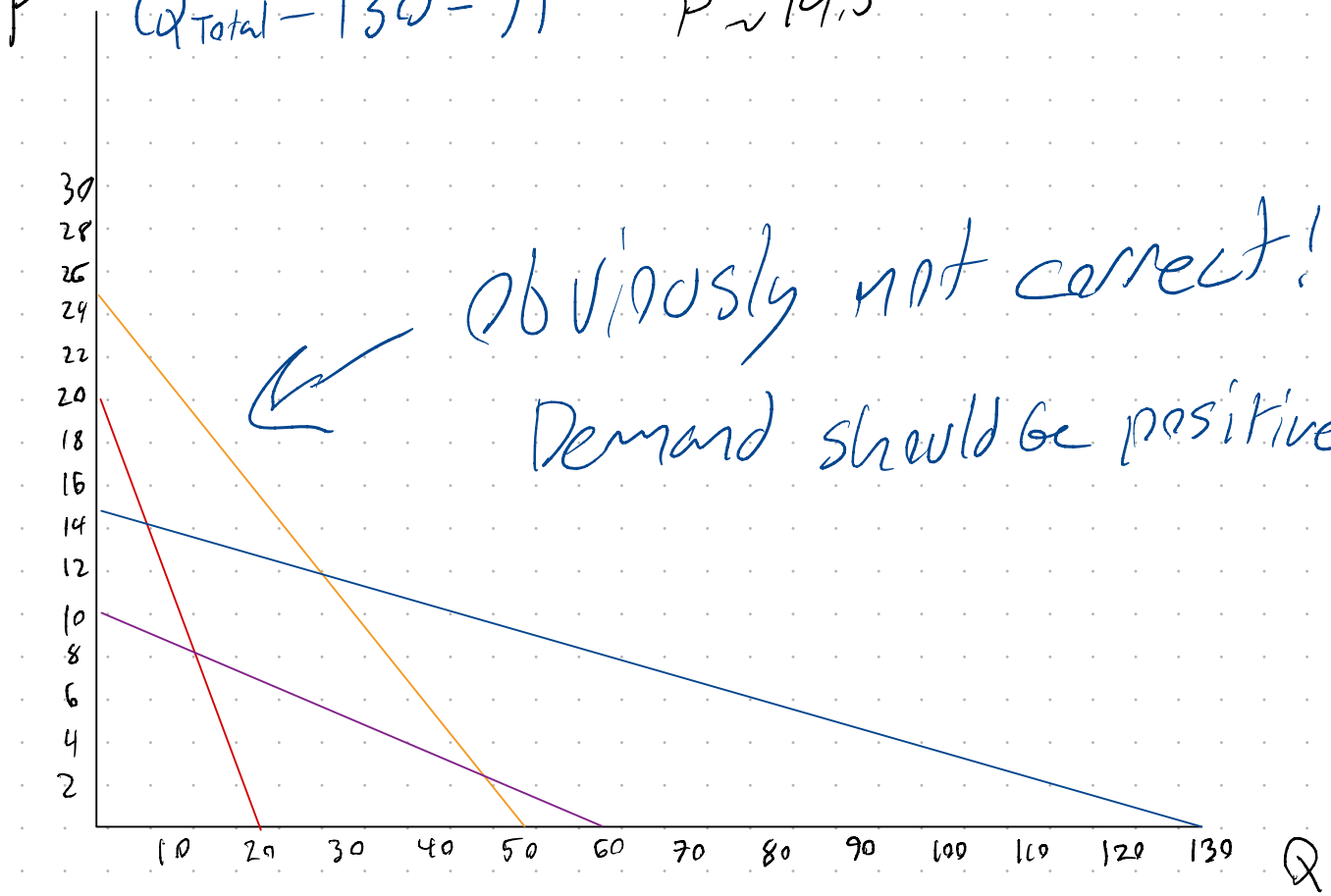
5.5 Combining Individual demand curves to obtain the market demand curve.

3 consumers: A B C

	y-intercept
$Q_A = 20 - P$	$P = 20$
$Q_B = 50 - 2P$	$P = 25$
$Q_C = 60 - 6P$	$P = 10$
$Q_{Total} = 130 - 9P$	$P \approx 14.5$

To find total demand, add demand curves horizontally.



obviously not correct!

Demand should be positive.

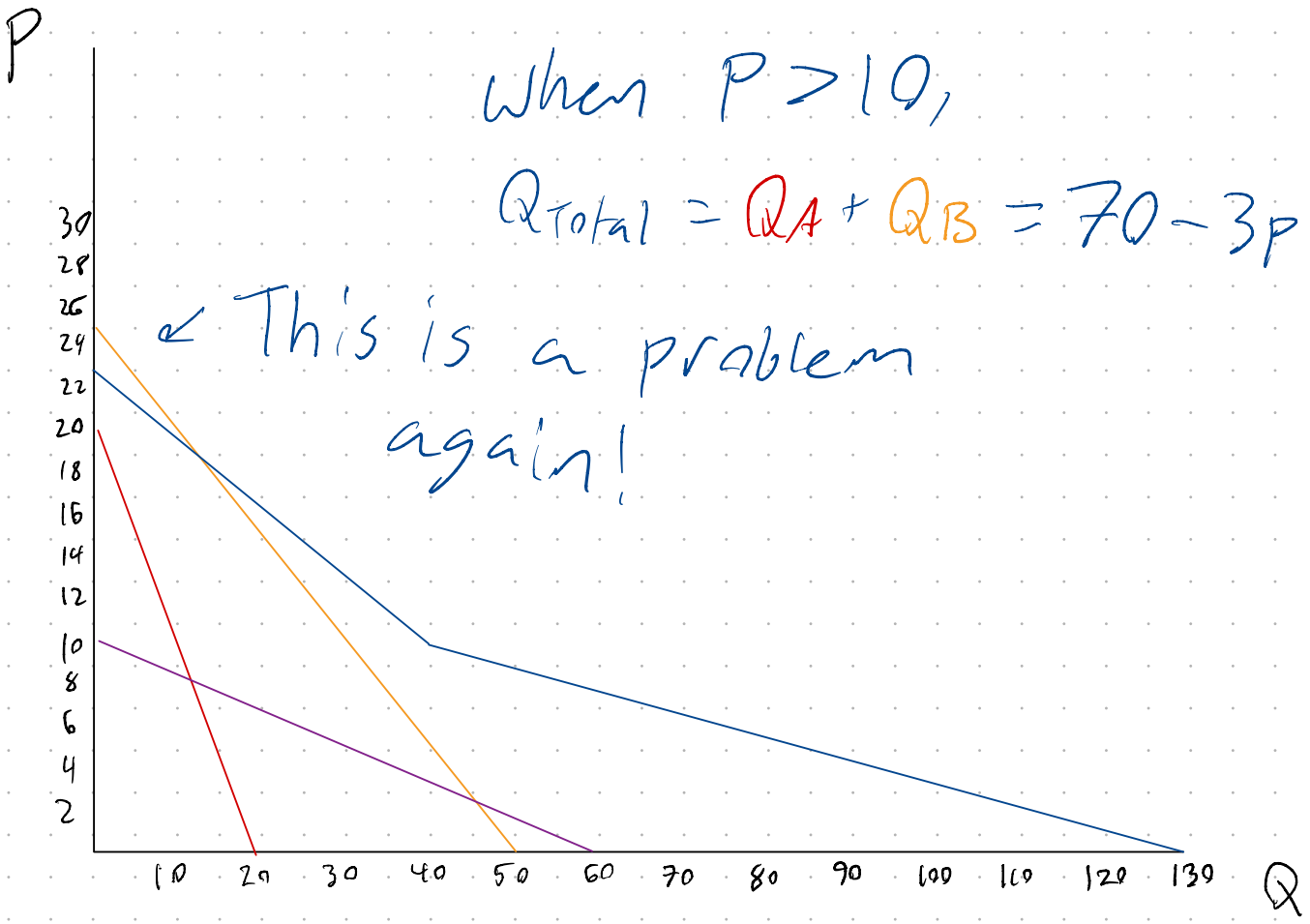
3 consumers: A B C

To find total demand, add demand curves horizontally.

$Q_A = 20 - P$ — y-intercept $P = 20$

$Q_B = 50 - 2P$ — $P = 25$

$Q_C = 60 - 6P$ — $P = 10$



When $P > 10$,

$Q_{Total} = Q_A + Q_B = 70 - 3P$

↙ This is a problem again!

$Q_{Total} = 130 - 9P$ when $p \in [0, 10]$

↗

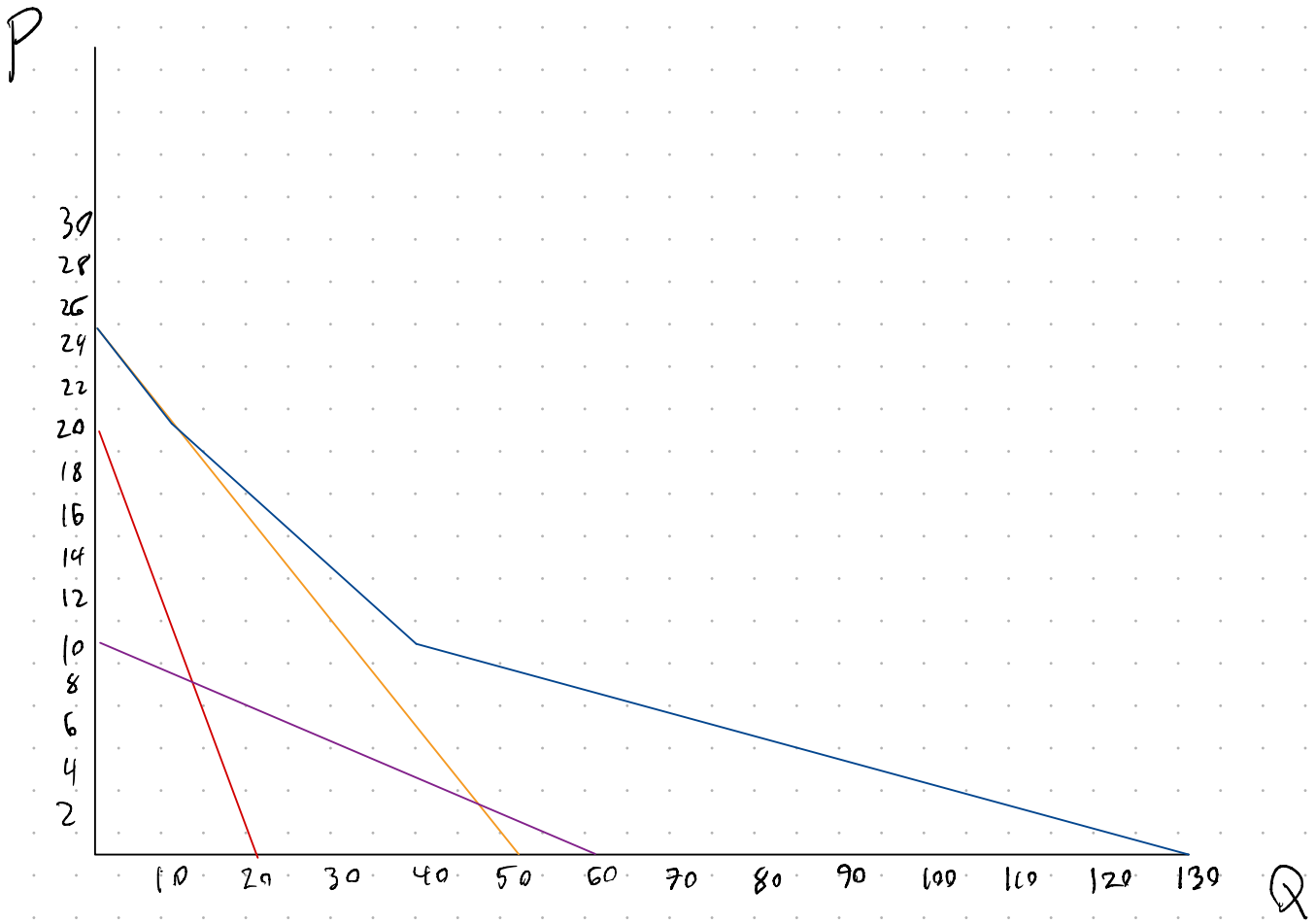
3 consumers: A B C

To find total demand, add demand curves horizontally.

$Q_A = 20 - P$ — y-intercept $P = 20$

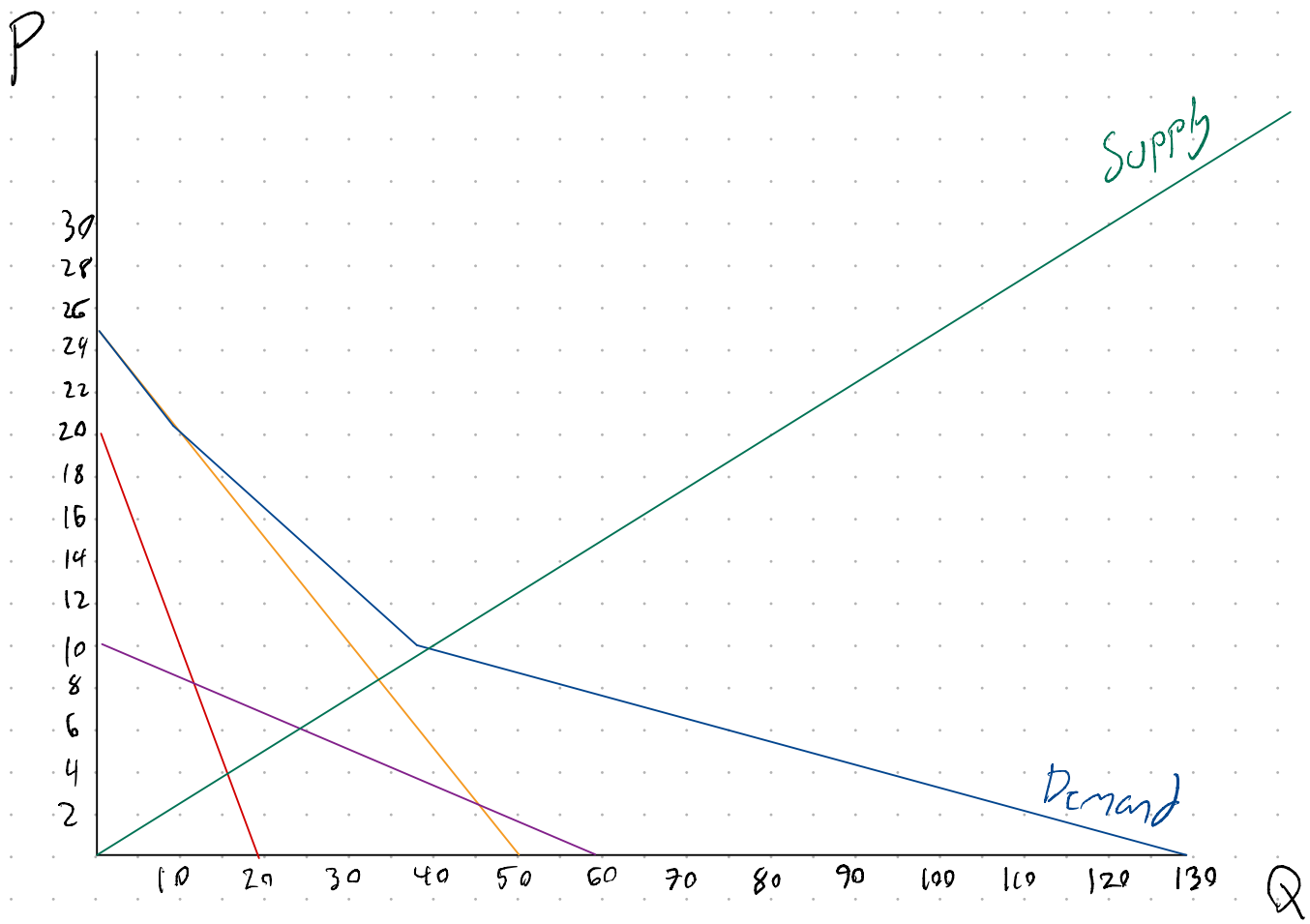
$Q_B = 50 - 2P$ — $P = 25$

$Q_C = 60 - 6P$ — $P = 10$



$$Q_{Total} = \begin{cases} 130 - 9p & \text{when } p \in [0, 10] \\ 70 - 3p & \text{when } p \in (10, 20] \\ 50 - 2p & \text{when } p \in (20, 25] \\ 0 & \text{else} \end{cases}$$

$Q_{supply} = 4p$



$Q_A = 20 - P$ $Q_A = 10$

$Q_B = 50 - 2P$ $Q_B = 30$

$Q_C = 60 - 6P$ $Q_C = 0$

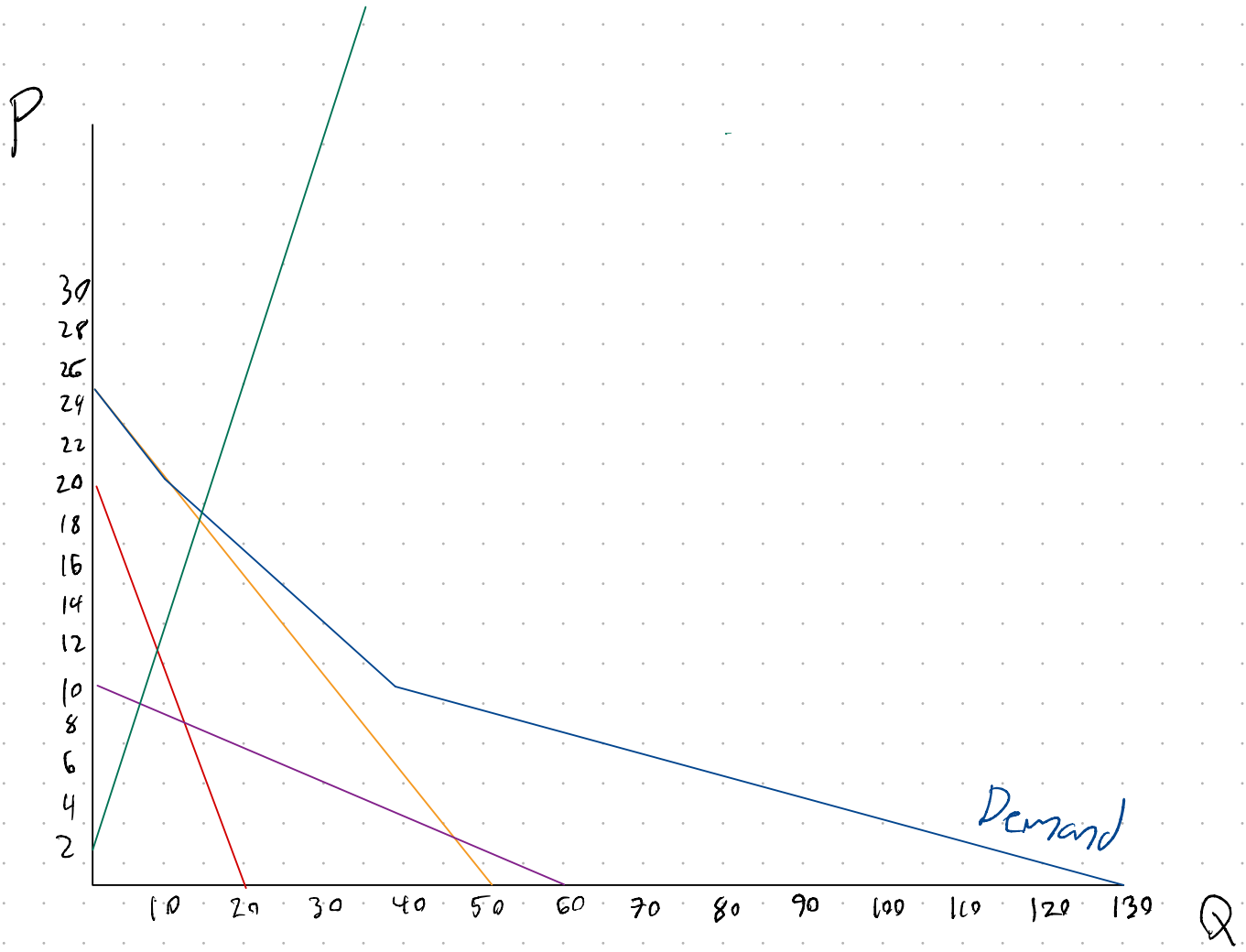
$130 - 9p = 4p$

$130 = 13p$

$P = 10$

$Q = 40$

$Q_{supply} = -10 + P$



$130 - 9P = -10 + P$

$140 = 10P$

$P = 14$

✗ can't do this since $P \notin [0, 10]$

$70 - 3p = -10 + p$

$80 = 4p$

$\boxed{20 = p}$ $\boxed{Q = -10 + 20 = 10}$

$\checkmark$ $p \in [10, 20]$

$Q_A = 20 - p$ $Q_A = 0$

$Q_B = 50 - 2p$ $Q_B = 10$

$Q_C = 60 - 6p$ $Q_C = 0$