Equilibrium GDP

Equilibrium GDP is that output level at which the total amount of goods produced, GDP, is just equal to the total amount of goods purchased. In a world with no government or foreign sector, the amount purchased is $C + I_g$. Additionally, GDP and disposable income (DI) are the same, so that our earlier relationship between consumption and DI holds for GDP as well: $C = a + b\text{DI} = a + bY$ where a is autonomous consumption, b is the marginal propensity to consume, and Y is GDP. Equilibrium GDP is then found as the solution to the following: $Y = C + I_g = a + bY + I_g$.

Subtracting bY from both sides of the equation, we obtain $Y - bY = a + I_g$. Next, factor out the common Y term: $Y(1 - b) = a + I_g$. Since the MPC is less than one, we can divide both sides by the factor $(1 - b)$ to obtain our result: $Y_e = \left(\frac{1}{1-b}\right) \text{ x } (a + I_g)$.

Following the example in the text, the consumption schedule is $C = \$97.5 + .75Y$ and $I_g = \$20$ billion. Hence, equilibrium GDP is $Y_e = \left(\frac{1}{1-.75}\right) \text{ x } (97.5 + 20) = 4 \text{ x } 117.5 = \$470$ billion. We can check our results by computing consumption at a GDP of \$470: $C = 97.5 + .75 \text{ x } 470 = \$450$. Adding this to planned investment of \$20, we see that planned purchases of \$450 and \$20 do indeed total the planned output of \$470.