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$$\textcircled{1} Y = (I + GH)^{-1} GR \rightarrow TR = (I + GH)^{-1} GR$$
$$T = (I + GH)^{-1} G$$
$$Y = TR$$

$$Z = MY \rightarrow R - E = MY \rightarrow R - G^{-1}Y = MY \rightarrow R = (G^{-1} + M)Y$$

$$R = (I + HG)G^{-1}Y \rightarrow (I + HG)^{-1}R = G^{-1}Y \rightarrow Y = G(I + HG)^{-1}R$$

$$\therefore T = G(I + HG)^{-1}$$

$$\text{Logo: } G(I + HG)^{-1} = (I + GH)^{-1}G = G(I + L)^{-1}$$

Portanto são iguais

$$\textcircled{2} Z = MY = MGE = MG(R - Z) \quad Z = MGR / (I + GM)$$

$$ZR^{-1} = (I + MG)^{-1}MG \quad Z = M(I + GM)^{-1}GR$$

$$Y = GE$$

Escalonando:

$$M^{-1}Z = G(R - Z)$$

$$MG = GM = L$$

$$(M^{-1} + G)Z = GR$$

$$\frac{Z}{R} = \frac{GM}{(I + GM)} = \frac{L}{I + L}$$

$$(I + GM)M^{-1}Z = GR$$

$$\textcircled{3} Y = GM \cdot C$$

$$\frac{Y}{R} = \frac{G}{1 + GM}$$

$$Y = GE$$

$$Y = GM(A - Y)$$

$$Y = G(R - Z)$$

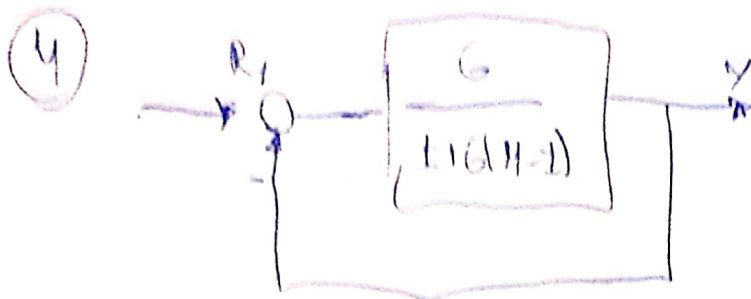
$$Y = GHR - YH - GHY$$

$$Y = G(R - YH)$$

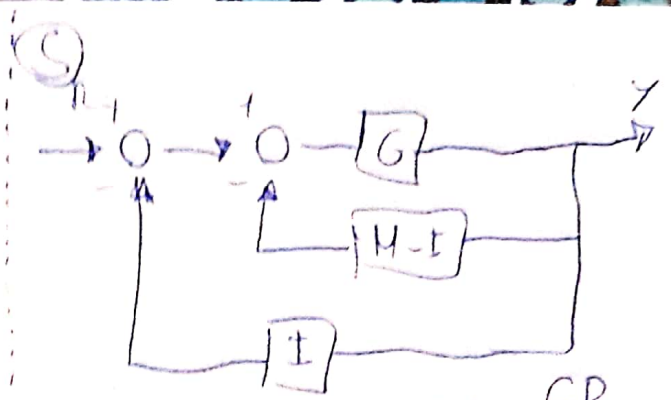
$$Y(1 + GH) = GR$$

$$Y(1 + MG) = GR$$

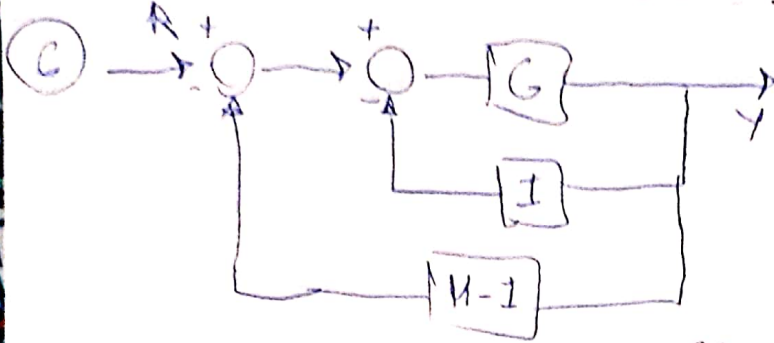
$$\frac{Y}{R} = \frac{G}{1 + GU}$$



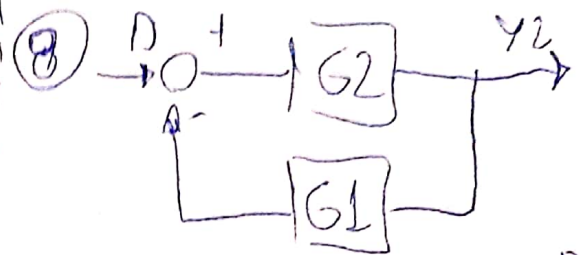
$$Y = (R - Y) \frac{G}{1 + GH - 1} \rightarrow Y = \frac{GR}{1 + GH}$$



$$Y = (R - Y - Y(H-1))G \rightarrow Y = \frac{GR}{1 + HG}$$



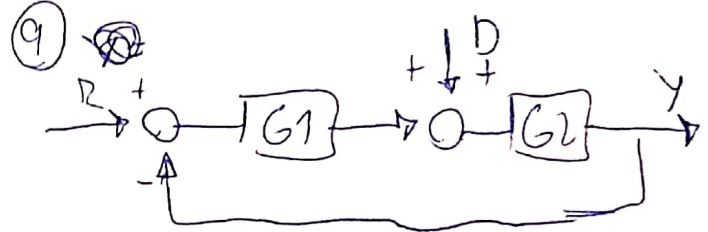
$$Y = (R - Y(H-1) - YI)G \rightarrow Y = \frac{GR}{1 + GH}$$



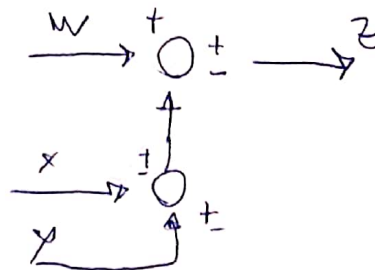
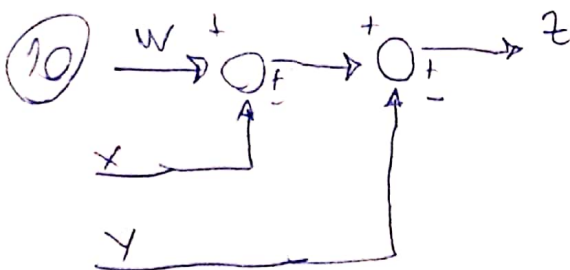
$$Y_2 = (D - Y_2 G_1) G_2 \rightarrow Y_2 = \frac{D G_2}{1 + G_1 G_2}$$



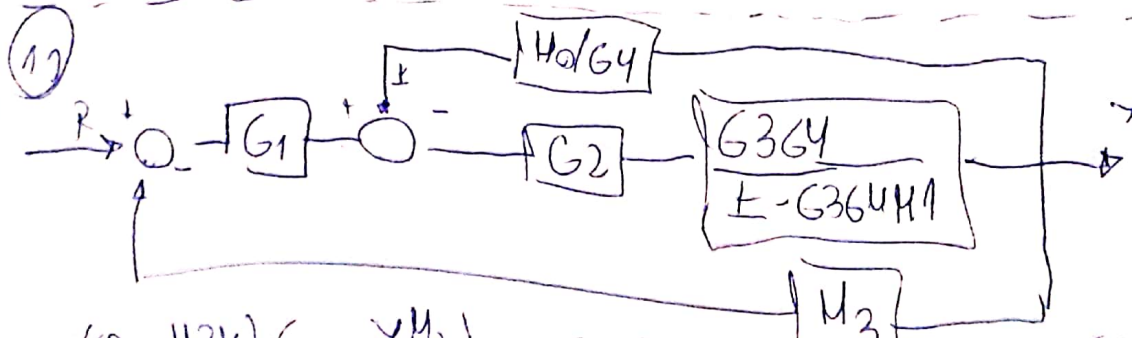
$$Y_1 = (R - Y_1) G_1 G_2 \rightarrow Y_1 = \frac{R G_1 G_2}{1 + G_1 G_2}$$



$$Y = ((R - Y) G_1 + D) G_2 \rightarrow Y = \frac{(R G_1 + D) R}{1 + G_1 G_2}$$



Em ambas as esquemas, tem-se:  
 $Z = W + X - Y$



$$Y = \left( (R - H_3 Y) G_1 - \frac{Y H_2}{G_4} \right) \frac{G_2 G_3 G_4}{1 - G_3 G_4 H_1} \rightarrow Y = \frac{R G_1 G_2 G_3 G_4}{1 - H_1 G_3 G_4 - H_2 G_2 G_3 - H_3 G_1 G_2 G_4}$$