$$W(y,\gamma) = y \cdot f(\gamma) \cdot P[n \le m_2] \cdot (1-cy) + (1-y)\, f(\gamma)\, P[n \le m_1]$$

$$\frac{dw}{dx} = \frac{\partial w}{\partial y} \cdot \frac{dy}{dx} + \frac{\partial w}{\partial \gamma}\frac{d\gamma}{dx}$$

$$\frac{dw}{dx} \cdot \frac{dx}{dy} = \frac{\partial w}{\partial y} \cdot \cancel{\frac{dy}{dx}}\cancel{\frac{dx}{dy}} + \frac{\partial w}{\partial \gamma}\frac{d\gamma}{\cancel{dx}} \cdot \frac{\cancel{dx}}{dy}$$

$$\frac{dw}{dy} = \frac{\partial w}{\partial y} + \frac{\partial w}{\partial \gamma} \cdot \frac{d\gamma}{dy} = r$$

$$\frac{\partial w}{\partial y} = \frac{f(\gamma) \cdot P[n \le m_2](y - cy^2) + f(\gamma) P(n \le m_1)(1-y)}{\partial y}$$

$$= f(\gamma) \cdot P_2 (1 - 2cy) + f(\gamma) P_1 \ (-1)$$

$$r \cdot \frac{\partial w}{\partial \gamma} = \left[\overset{(y-cy^2)}{\cancel{y}} \cdot P_2 \cdot f'(\gamma) + (1-y) P_1 \ f'(\gamma) \right] \cdot r$$

$r = \frac{d\gamma}{dy}$

$$\cancel{= (1-cy) \cdot y \cdot r \cdot P_2 + (1-y)}$$

$f(\gamma) = 1 - \gamma$

$$= (1-cy) \cdot y \cdot \underset{=-1}{f'(\gamma)} \cdot r \cdot P_2 + (1-y)\, \underset{=-1}{f'(\gamma)} \cdot r \cdot P_1$$

$+ \quad + \quad + \quad - \quad + \quad +$

$$= -(1-cy)\, y \cdot r \cdot P_2 - (1-y) \cdot r \cdot P_1$$

$$\left[f(\gamma)(1-2cy) + \overset{f'(\gamma)}{(1-cy)} \cdot y \cdot r \right] P_2 + \cancel{\left[-f(\gamma)(1-y) + r \cdot (1-y) \right] P_1}$$

$$+ \left[-f(\gamma) + f'(\gamma) \cdot r\,(1-y) \right] P_1$$

$- \quad + \quad +$

$(1-2cy)\, P_2 + \quad ? \, P_1$