

$$\begin{aligned}
 P(X) &= \frac{(X-X_2)(X-X_3)}{(X_1-X_2)(X_1-X_3)} Y_1 \\
 &+ \frac{(X-X_1)(X-X_3)}{(X_2-X_1)(X_2-X_3)} Y_2 \\
 &+ \frac{(X-X_1)(X-X_2)}{(X_3-X_1)(X_3-X_2)} Y_3
 \end{aligned}$$

$$\begin{aligned}
 Y_{12} &= \text{FLINE}(X_1, Y_1, X_2, Y_2, X) \\
 &= \frac{(Y_1(X_2-X) + Y_2(X-X_1))}{(X_2-X_1)}
 \end{aligned}$$

$$\begin{aligned}
 Y_{23} &= \text{FLINE}(X_2, Y_2, X_3, Y_3, X) \\
 &= \frac{(Y_2(X_3-X) + Y_3(X-X_2))}{(X_3-X_2)}
 \end{aligned}$$

$$\begin{aligned}
 Y_{123} &= \text{FLINE}(X_1, Y_{12}, X_3, Y_{23}, X) \\
 &= \frac{(Y_{12}(X_3-X) + Y_{23}(X-X_1))}{(X_3-X_1)}
 \end{aligned}$$

$$Y_{123} = \left[\frac{Y_1(X_2 - X) + Y_2(X - X_1)}{(X_2 - X_1)(X_3 - X_1)} \right] (X_3 - X) \\ + \left[\frac{Y_2(X_3 - X) + Y_3(X - X_2)}{(X_3 - X_2)(X_3 - X_1)} \right] (X - X_1)$$

$$Y_{123} = \left[\frac{Y_1(X_2 - X) + Y_2(X - X_1)}{(X_2 - X_1)(X_3 - X_1)(X_3 - X_2)} \right] (X_3 - X)(X_3 - X_2) \\ + \left[\frac{Y_2(X_3 - X) + Y_3(X - X_2)}{(X_2 - X_1)(X_3 - X_1)(X_3 - X_2)} \right] (X - X_1)(X_2 - X_1)$$

$$\left[(X_2 - X_1)(X_3 - X_1)(X_3 - X_2) \right] Y_{123} = \\ Y_1 \left[(X_2 - X)(X_3 - X)(X_3 - X_2) \right] \\ + Y_2 \left[(X - X_1)(X_3 - X)(X_3 - X_2) + (X_3 - X)(X - X_1)(X_2 - X_1) \right] \\ + Y_3 \left[(X - X_2)(X - X_1)(X_2 - X_1) \right]$$

$$\begin{aligned}\frac{dP}{dX} &= \frac{Y_1 [2X - X_2 - X_3]}{(X_3 - X_1)(X_3 - X_1)} \\ &+ \frac{Y_2 [2X - X_1 - X_3]}{(X_2 - X_1)(X_2 - X_3)} \\ &+ \frac{Y_3 [2X - X_1 - X_2]}{(X_3 - X_1)(X_3 - X_2)}\end{aligned}$$

$$\begin{aligned}\left. \frac{dP}{dX} \right|_{X=X_2} &= \frac{Y_1 [X_2 - X_3]}{(X_3 - X_1)(X_3 - X_1)} \\ &+ \frac{Y_2 [X_2 - X_1]}{(X_2 - X_1)(X_2 - X_3)} + \frac{Y_2 [X_2 - X_3]}{(X_2 - X_1)(X_2 - X_3)} \\ &+ \frac{Y_3 [X_2 - X_1]}{(X_3 - X_1)(X_3 - X_2)}\end{aligned}$$

$$\begin{aligned}
 \frac{dP}{dx} \Big|_{x=x_2} &= \frac{(x_2-x_3)}{(x_2-x_1)} \left(\frac{Y_1(x_2-x_3) + Y_2(x_3-x_1)}{(x_3-x_1)(x_2-x_3)} \right) \\
 &\quad - \frac{(x_2-x_1)}{(x_3-x_2)} \left(\frac{Y_2(x_3-x_1) + Y_3(x_1-x_2)}{(x_3-x_1)(x_2-x_1)} \right) \\
 &= \frac{Y_1(x_2-x_3) + Y_2(x_3-x_1)}{(x_3-x_1)(x_2-x_1)} \\
 &\quad - \left(\frac{Y_2(x_3-x_1) + Y_3(x_1-x_2)}{(x_3-x_1)(x_3-x_2)} \right)
 \end{aligned}$$

$$\begin{aligned}
 Y_{12} \Big|_{x=x_3} &= \text{FLINE}(x_1, Y_1, x_3, Y_2, x_3) \\
 &= \frac{(Y_1(x_2-x_3) + Y_2(x_3-x_1))}{(x_2-x_1)}
 \end{aligned}$$

$$\begin{aligned}
 Y_{23} \Big|_{x=x_1} &= \text{FLINE}(x_2, Y_2, x_3, Y_3, x_1) \\
 &= \frac{(Y_2(x_3-x_1) + Y_3(x_1-x_2))}{(x_3-x_2)}
 \end{aligned}$$

$$\frac{dP}{dx} \Big|_{x=x_2} = \frac{FLINE(x_1, y_1, x_2, y_2, x_3) - FLINE(x_2, y_2, x_3, y_3, x_1)}{(x_3 - x_1)}$$