In the example, showing why prefix/suffix works

$p_0p_1 \dots p_{i-1}(1-p_i) * (1-(1-p_{i+1})(1-p_{i+2}) * \dots * (1-p_k)) +$

$p_0p_1 \dots p_{i-1}p_i(1-p_{i+1}) * (1-(1-p_{i+2}) * \dots * (1-p_k))$

$p_0p_1 \dots p_{i-1} * [(1-p_i) * (1-(1-p_{i+1})(1-p_{i+2}) * \dots * (1-p_k)) + p_i(1-p_{i+1}) * (1-(1-p_{i+2}) * \dots * (1-p_k))]$

$p_0p_1 \dots p_{i-1} * [(1-p_i) - (1-p_i)(1-p_{i+1})(1-p_{i+2}) * \dots * (1-p_k)) + p_i(1-p_{i+1}) * (1-(1-p_{i+2}) * \dots * (1-p_k))]$

$p_0p_1 \dots p_{i-1} * [(1-p_i) - (1-p_i)(1-p_{i+1})(1-p_{i+2}) * \dots * (1-p_k)) + p_i(1-p_{i+1}) - p_i(1-p_{i+1})(1-p_{i+2}) * \dots * (1-p_k))]$

$p_0p_1 \dots p_{i-1} * [(1-p_i) + p_i(1-p_{i+1}) - (1-p_i)(1-p_{i+1})(1-p_{i+2}) * \dots * (1-p_k) - p_i(1-p_{i+1})(1-p_{i+2}) * \dots * (1-p_k))]$

$p_0p_1 \dots p_{i-1} * [(1-p_ip_{i+1}) - (1-p_i)(1-p_{i+1})(1-p_{i+2}) * \dots * (1-p_k) - p_i(1-p_{i+1})(1-p_{i+2}) * \dots * (1-p_k))]$

$1-p_i and p_i$ cancel out

$p_0p_1 \dots p_{i-1} * [1-p_ip_{i+1} - (1-p_{i+1})(1-p_{i+2}) * \dots * (1-p_k)]$

Prefix/suffix

$(1-p_0) * (1-(1-p_1)(1-p_2)(1-p_3)(1-p_4)(1-p_5)$
$p0(1-p_1) * (1-(1-p_2)(1-p_3)(1-p_4)(1-p_5)$
$p0p1(1-p_2) * (1-(1-p_3)(1-p_4)(1-p_5)$
$p0p1p2(1-p_3) * (1-(1-p_4)(1-p_5)$
$p0p1p2p3(1-p_4) * (1-(1-p_5)$

If suffix is p_3, p_4, p_5 then we multiply $1-p_0, p0 * 1-p_1 * p0p1 * (1-p2)$