4.1

P(I always like foreign films | Pos)

= P(I|Pos) . P(always|Pos) . P(like|Pos) . P(foreign|Pos) . P(films|Pos)

= 0,09 . 0,07 . 0,29 . 0,04 . 0,08

= $5.846 \cdot 10^{-6}$

P(I always like foreign films | neg)

= P(I|neg) . P(always|neg) . P(like|neg) . P(foreign|neg) . P(films|neg)

= 0,16 . 0,06 . 0,06 . 0,15 . 0,11

= $9,504 \cdot 10^{-6}$

⇒ Naive Bayes assign class neg

4.2 Model

	comedy	action
fun	0,25	1/9
couple	3/16	1/18
love	3/16	1/9
fast	1/8	1/6
furious	1/16	1/6
shoot	1/16	5/18
fly	1/8	1/9

$V = 7$

$P(D|comedy) = P(fast|comedy) \cdot P(couple|comedy) \cdot P(shoot|comedy) \cdot P(fly|comedy)$

$= \frac{1}{8} \cdot \frac{3}{16} \cdot \frac{1}{16} \cdot \frac{1}{8} = \frac{3}{16384}$

$\Rightarrow P(comedy|D) = P(comedy) \cdot P(D|comedy)$

$= \frac{3}{40960}$

$P(D|action) = P(fast|action) \cdot P(couple|action) \cdot P(shoot|action) \cdot P(fly|action)$

$= \frac{1}{6} \cdot \frac{1}{18} \cdot \frac{5}{18} \cdot \frac{1}{9} = \frac{5}{17496}$

$\Rightarrow P(action|D) = P(action) \cdot P(D|action) = 0,6 \cdot \frac{5}{17496}$

$= \frac{1}{5832}$

(We ignore the P(D) in both equations)

P(action|D) > P(comedy|D) ⇒ The most likely class for D is action.