

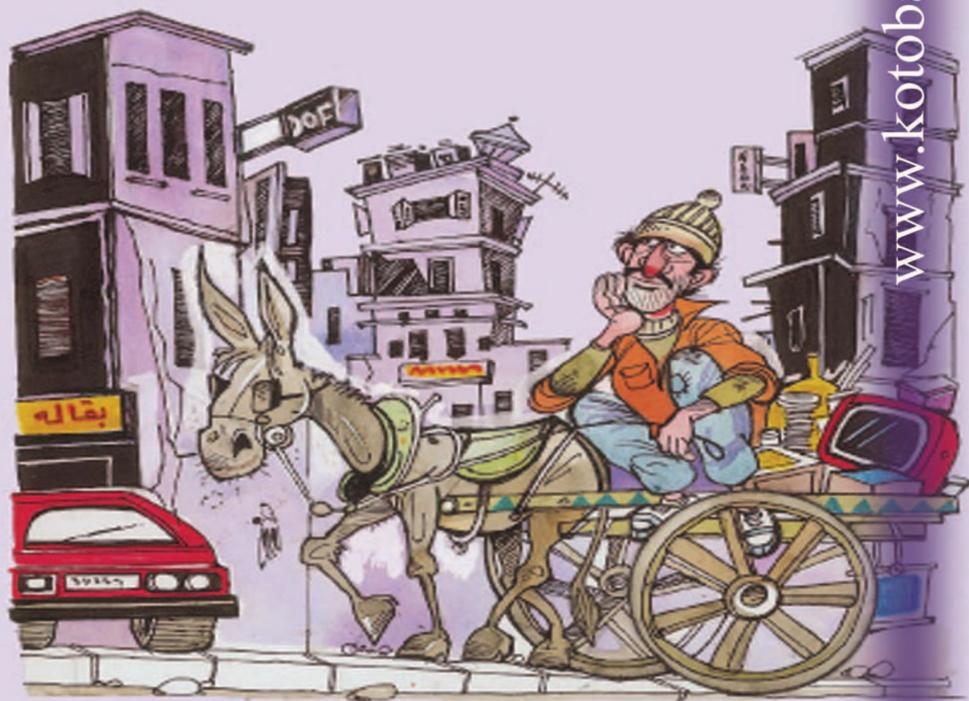
www.kotobarabia.com

نعيم صبرى

حافظ  
بتاع الروبايكييا  
رواية



www.kotobarabia.com





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## طبقا لقوانين الملكية الفكرية

جميع حقوق النشر و التوزيع الالكتروني  
لهذا المصنف محفوظة لكتب عربية. يحظر  
نقل أو إعادة نسخ أو إعادة بيع أى جزء من  
هذا المصنف و بثه الكترونيا (عبر الانترنت أو  
للمكتبات الالكترونية أو الأقراص المدمجة أو أى  
وسيلة أخرى) دون الحصول على إذن كتابي من  
كتب عربية. حقوق الطبع الورقى محفوظة  
للمؤلف أو ناشره طبقا للتعاقدات السارية.

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... "The first thing I did was to get a job. I was a clerk in a bank."

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14.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k} = \ln 2$  (Theorem 7.20.1)
15.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^2} = \frac{\pi^2}{6}$  (Theorem 7.20.1)
16.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^3} = \frac{\zeta(3)}{1}$  (Theorem 7.20.1)
17.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^4} = \frac{\zeta(4)}{1}$  (Theorem 7.20.1)
18.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^5} = \frac{\zeta(5)}{1}$  (Theorem 7.20.1)
19.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^6} = \frac{\zeta(6)}{1}$  (Theorem 7.20.1)
20.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^7} = \frac{\zeta(7)}{1}$  (Theorem 7.20.1)
21.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^8} = \frac{\zeta(8)}{1}$  (Theorem 7.20.1)
22.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^9} = \frac{\zeta(9)}{1}$  (Theorem 7.20.1)
23.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{10}} = \frac{\zeta(10)}{1}$  (Theorem 7.20.1)
24.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{11}} = \frac{\zeta(11)}{1}$  (Theorem 7.20.1)
25.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{12}} = \frac{\zeta(12)}{1}$  (Theorem 7.20.1)
26.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{13}} = \frac{\zeta(13)}{1}$  (Theorem 7.20.1)
27.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{14}} = \frac{\zeta(14)}{1}$  (Theorem 7.20.1)
28.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{15}} = \frac{\zeta(15)}{1}$  (Theorem 7.20.1)
29.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{16}} = \frac{\zeta(16)}{1}$  (Theorem 7.20.1)
30.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{17}} = \frac{\zeta(17)}{1}$  (Theorem 7.20.1)
31.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{18}} = \frac{\zeta(18)}{1}$  (Theorem 7.20.1)
32.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{19}} = \frac{\zeta(19)}{1}$  (Theorem 7.20.1)
33.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{20}} = \frac{\zeta(20)}{1}$  (Theorem 7.20.1)
34.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{21}} = \frac{\zeta(21)}{1}$  (Theorem 7.20.1)
35.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{22}} = \frac{\zeta(22)}{1}$  (Theorem 7.20.1)
36.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{23}} = \frac{\zeta(23)}{1}$  (Theorem 7.20.1)
37.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{24}} = \frac{\zeta(24)}{1}$  (Theorem 7.20.1)
38.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{25}} = \frac{\zeta(25)}{1}$  (Theorem 7.20.1)
39.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{26}} = \frac{\zeta(26)}{1}$  (Theorem 7.20.1)
40.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{27}} = \frac{\zeta(27)}{1}$  (Theorem 7.20.1)
41.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{28}} = \frac{\zeta(28)}{1}$  (Theorem 7.20.1)
42.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{29}} = \frac{\zeta(29)}{1}$  (Theorem 7.20.1)
43.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{30}} = \frac{\zeta(30)}{1}$  (Theorem 7.20.1)
44.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{31}} = \frac{\zeta(31)}{1}$  (Theorem 7.20.1)
45.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{32}} = \frac{\zeta(32)}{1}$  (Theorem 7.20.1)
46.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{33}} = \frac{\zeta(33)}{1}$  (Theorem 7.20.1)
47.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{34}} = \frac{\zeta(34)}{1}$  (Theorem 7.20.1)
48.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{35}} = \frac{\zeta(35)}{1}$  (Theorem 7.20.1)
49.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{36}} = \frac{\zeta(36)}{1}$  (Theorem 7.20.1)
50.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{37}} = \frac{\zeta(37)}{1}$  (Theorem 7.20.1)
51.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{38}} = \frac{\zeta(38)}{1}$  (Theorem 7.20.1)
52.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{39}} = \frac{\zeta(39)}{1}$  (Theorem 7.20.1)
53.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{40}} = \frac{\zeta(40)}{1}$  (Theorem 7.20.1)
54.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{41}} = \frac{\zeta(41)}{1}$  (Theorem 7.20.1)
55.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{42}} = \frac{\zeta(42)}{1}$  (Theorem 7.20.1)
56.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{43}} = \frac{\zeta(43)}{1}$  (Theorem 7.20.1)
57.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{44}} = \frac{\zeta(44)}{1}$  (Theorem 7.20.1)
58.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{45}} = \frac{\zeta(45)}{1}$  (Theorem 7.20.1)
59.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{46}} = \frac{\zeta(46)}{1}$  (Theorem 7.20.1)
60.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{47}} = \frac{\zeta(47)}{1}$  (Theorem 7.20.1)
61.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{48}} = \frac{\zeta(48)}{1}$  (Theorem 7.20.1)
62.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{49}} = \frac{\zeta(49)}{1}$  (Theorem 7.20.1)
63.  $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^{50}} = \frac{\zeta(50)}{1}$  (Theorem 7.20.1)

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the fact that the  $\mathbb{Z}_2$ -action is not free, the quotient is not a manifold. However, the quotient is a stratified space, and the quotient map is a stratified map.

Let  $X$  be a stratified space, and let  $Y$  be a topological space. A stratified map  $f: X \rightarrow Y$  is a continuous map that maps strata to strata. More precisely, if  $S_i$  is a stratum of  $X$ , then  $f(S_i)$  is a stratum of  $Y$ .

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Country	Year	Value	Unit
Algeria	1980	10.0	1000000000
	1981	10.0	1000000000
Angola	1980	10.0	1000000000
	1981	10.0	1000000000
Cuba	1980	10.0	1000000000
	1981	10.0	1000000000
Czechoslovakia	1980	10.0	1000000000
	1981	10.0	1000000000
Ecuador	1980	10.0	1000000000
	1981	10.0	1000000000
Ghana	1980	10.0	1000000000
	1981	10.0	1000000000
Greece	1980	10.0	1000000000
	1981	10.0	1000000000
Guatemala	1980	10.0	1000000000
	1981	10.0	1000000000
Honduras	1980	10.0	1000000000
	1981	10.0	1000000000
Indonesia	1980	10.0	1000000000
	1981	10.0	1000000000
Iran	1980	10.0	1000000000
	1981	10.0	1000000000
Iraq	1980	10.0	1000000000
	1981	10.0	1000000000
Italy	1980	10.0	1000000000
	1981	10.0	1000000000
Japan	1980	10.0	1000000000
	1981	10.0	1000000000
Korea	1980	10.0	1000000000
	1981	10.0	1000000000
Mexico	1980	10.0	1000000000
	1981	10.0	1000000000
Morocco	1980	10.0	1000000000
	1981	10.0	1000000000
Pakistan	1980	10.0	1000000000
	1981	10.0	1000000000
Peru	1980	10.0	1000000000
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Rwanda	1980	10.0	1000000000
	1981	10.0	1000000000
Senegal	1980	10.0	1000000000
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Tanzania	1980	10.0	1000000000
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Thailand	1980	10.0	1000000000
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Tunisia	1980	10.0	1000000000
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Yugoslavia	1980	10.0	1000000000
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is  $\frac{1}{2}$  of the total, the number of boys is  $\frac{1}{2} \times 120 = 60$ .

It is important to stress that the number of girls is not  $\frac{1}{2}$  of the number of boys, but  $\frac{1}{2}$  of the total number of children.

When the problem is presented in the form of a word problem, it is important to underline the given information and the question.

**Example 2:** In a school, there are 120 children. There are 60 boys. How many girls are there?

**Solution:** Given: Total number of children = 120  
Number of boys = 60

To find: Number of girls

**Solution:** Let the number of girls be  $x$ .

Total number of children = Number of boys + Number of girls

$120 = 60 + x$

$120 - 60 = 60 + x - 60$

$60 = x$

$x = 60$

$\therefore$  Number of girls = 60

**Example 3:** In a school, there are 120 children. There are 60 boys. How many girls are there?

**Solution:** Let the number of girls be  $x$ .

Total number of children = Number of boys + Number of girls

$120 = 60 + x$

$120 - 60 = 60 + x - 60$

$60 = x$

$x = 60$

$\therefore$  Number of girls = 60

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7	100	100	100	100
8	100	100	100	100
9	100	100	100	100
10	100	100	100	100
11	100	100	100	100
12	100	100	100	100
13	100	100	100	100
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