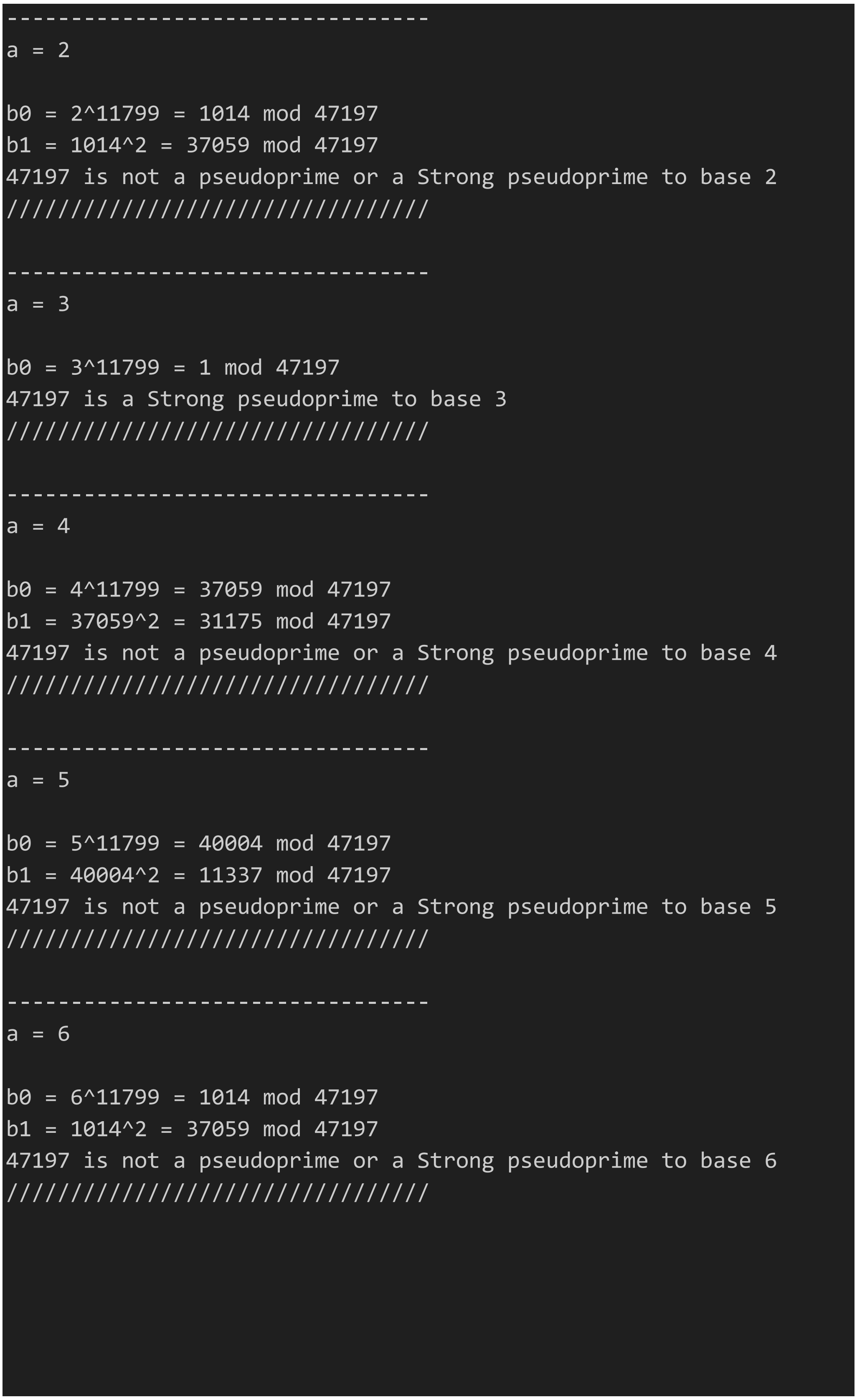
שם: שחר אשר
ת.ז. 209305408

מבוא להצפנה – תרגיל 3

1.

א.



```
---------------------------------
a = 2

b0 = 2^11799 = 1014 mod 47197
b1 = 1014^2 = 37059 mod 47197
47197 is not a pseudoprime or a Strong pseudoprime to base 2
/////////////////////////////////

---------------------------------
a = 3

b0 = 3^11799 = 1 mod 47197
47197 is a Strong pseudoprime to base 3
/////////////////////////////////

---------------------------------
a = 4

b0 = 4^11799 = 37059 mod 47197
b1 = 37059^2 = 31175 mod 47197
47197 is not a pseudoprime or a Strong pseudoprime to base 4
/////////////////////////////////

---------------------------------
a = 5

b0 = 5^11799 = 40004 mod 47197
b1 = 40004^2 = 11337 mod 47197
47197 is not a pseudoprime or a Strong pseudoprime to base 5
/////////////////////////////////

---------------------------------
a = 6

b0 = 6^11799 = 1014 mod 47197
b1 = 1014^2 = 37059 mod 47197
47197 is not a pseudoprime or a Strong pseudoprime to base 6
/////////////////////////////////
```

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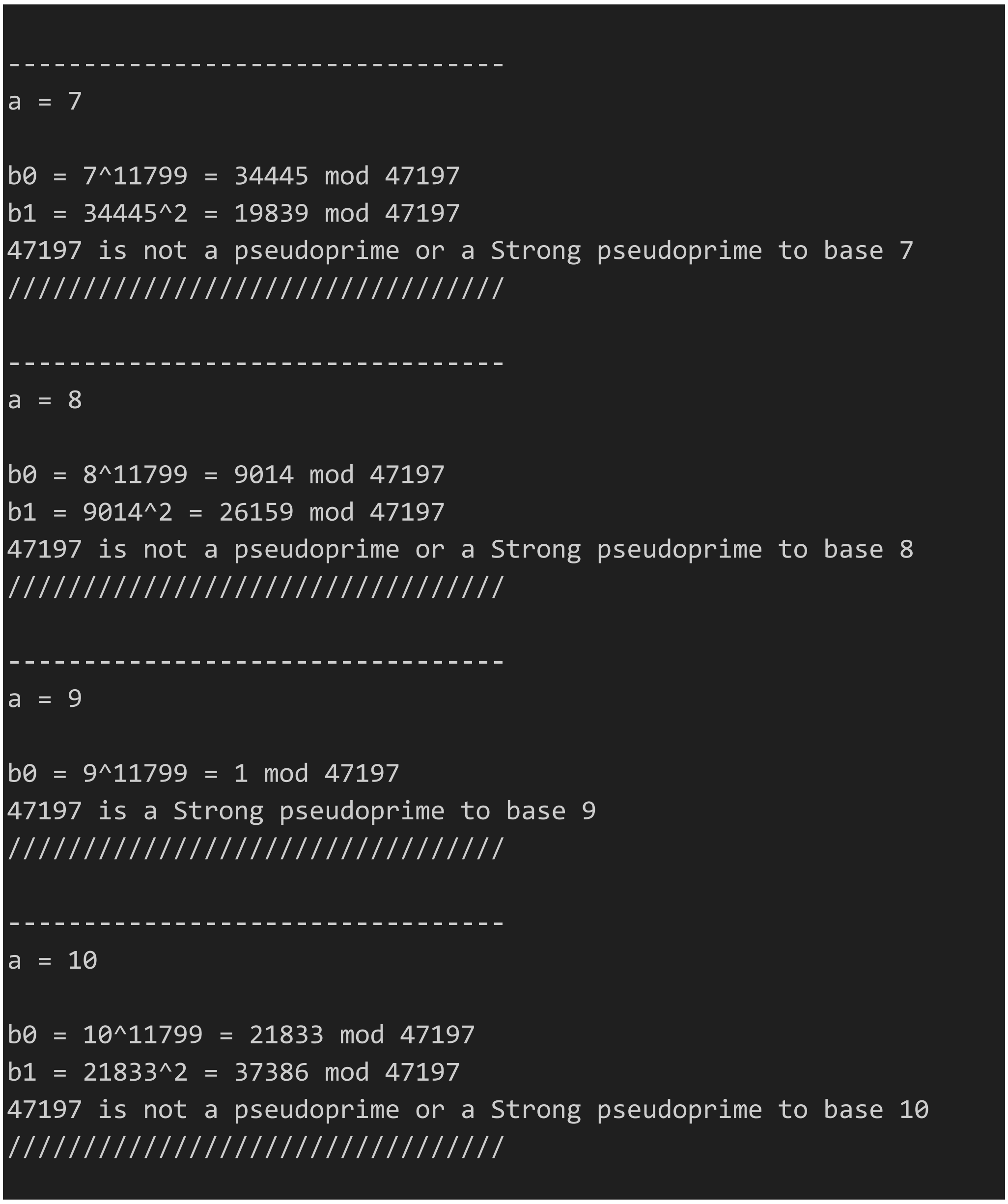

```
---------------------------------
a = 7

b0 = 7^11799 = 34445 mod 47197
b1 = 34445^2 = 19839 mod 47197
47197 is not a pseudoprime or a Strong pseudoprime to base 7
/////////////////////////////////

---------------------------------
a = 8

b0 = 8^11799 = 9014 mod 47197
b1 = 9014^2 = 26159 mod 47197
47197 is not a pseudoprime or a Strong pseudoprime to base 8
/////////////////////////////////

---------------------------------
a = 9

b0 = 9^11799 = 1 mod 47197
47197 is a Strong pseudoprime to base 9
/////////////////////////////////

---------------------------------
a = 10

b0 = 10^11799 = 21833 mod 47197
b1 = 21833^2 = 37386 mod 47197
47197 is not a pseudoprime or a Strong pseudoprime to base 10
/////////////////////////////////
```

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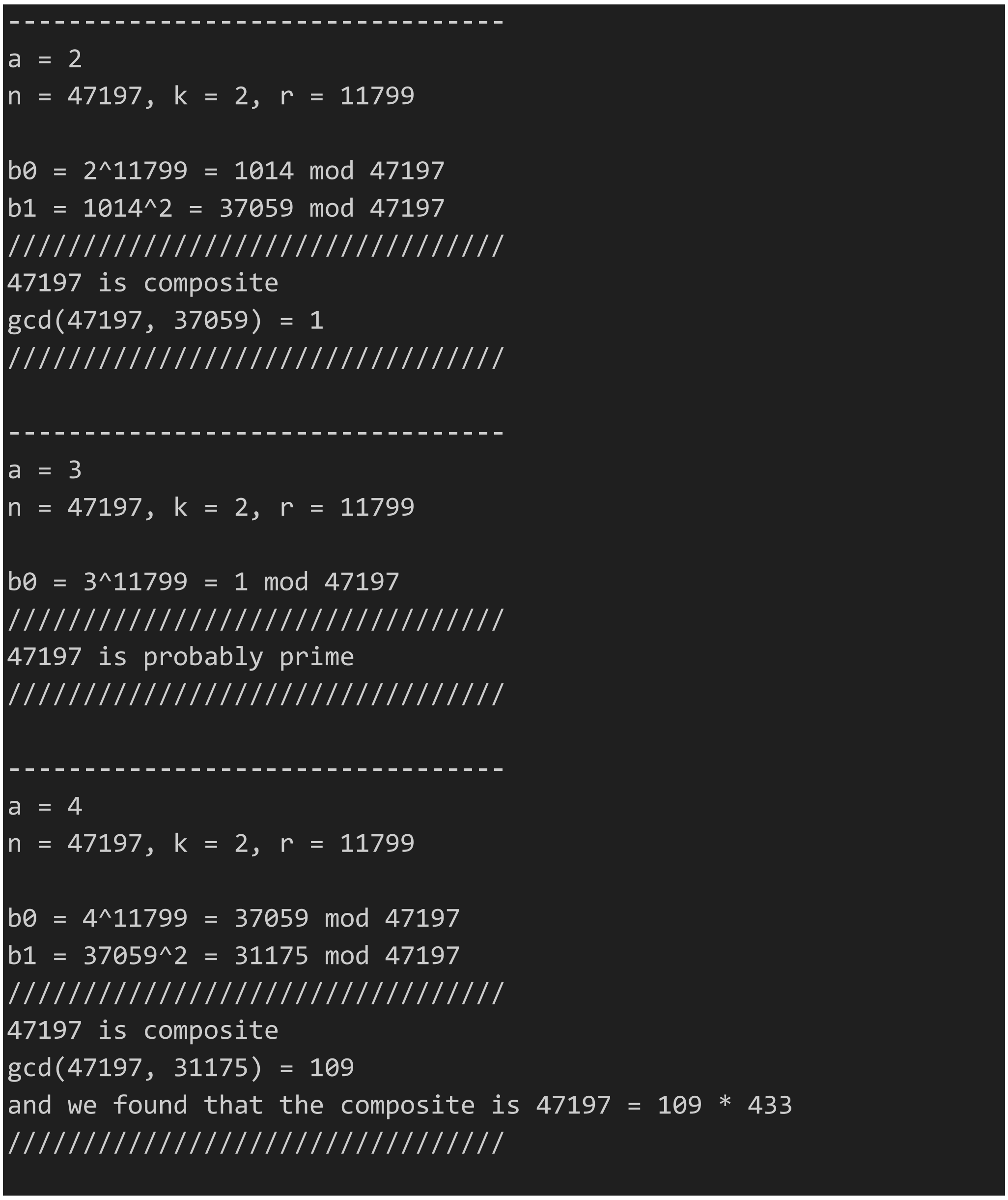
ב.



```
---------------------------------
a = 2
n = 47197, k = 2, r = 11799

b0 = 2^11799 = 1014 mod 47197
b1 = 1014^2 = 37059 mod 47197
/////////////////////////////////
47197 is composite
gcd(47197, 37059) = 1
/////////////////////////////////

---------------------------------
a = 3
n = 47197, k = 2, r = 11799

b0 = 3^11799 = 1 mod 47197
/////////////////////////////////
47197 is probably prime
/////////////////////////////////

---------------------------------
a = 4
n = 47197, k = 2, r = 11799

b0 = 4^11799 = 37059 mod 47197
b1 = 37059^2 = 31175 mod 47197
/////////////////////////////////
47197 is composite
gcd(47197, 31175) = 109
and we found that the composite is 47197 = 109 * 433
/////////////////////////////////
```

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