

**mathstutoring**

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**From:** mathstutoring [mathstutoring@ntlworld.com]**Sent:** 24 December 2006 18:21**To:** 'njas@research.att.com'**Subject:** A126164, A126165 and A126166

Here is the code for A126164, which you can copy and paste directly into your database. I found out what the original problem was, so this is a modification of that code. I have tested it, and it works fine

```
ExponentialDivisors[1]={1};ExponentialDivisors[n_]:=Module[{ },
  {pr,pows}=Transpose@FactorInteger[n];
  divpowers=Distribute[Divisors[pows],List];Sort[Times@@(pr^Transpose
[divpowers])]];properexponentialdivisorsum[k_]:=Plus@@ExponentialDivisors[k]-
k;properexponentialdivisorsum/@Range[50]
```

**Similarly for A126165**

```
ExponentialDivisors[1]={1};ExponentialDivisors[n_]:=Module[{ },
  {pr,pows}=Transpose@FactorInteger[n];
  divpowers=Distribute[Divisors[pows],List];Sort[Times@@(pr^Transpose
[divpowers])]];properexponentialdivisorsum[k_]:=Plus@@ExponentialDivisors[k]-
k;ExponentialAmicableNumberQ[k_]:=If[Nest[properexponentialdivisorsum,k,2]==k && !
properexponentialdivisorsum[k]==k,True,False];data1=Select[Range[5 10^6],ExponentialAmicableNumberQ
[#] &];data2=properexponentialdivisorsum[#] &/@data1;data3=Table[{data1[[k]],data2[[k]]},{k,1,Length
[data1]}];data4=Select[data3,First[#]<Last[#] &];Table[First[data4[[k]]],{k,1,Length[data4]}]
```

**And finally for A126166**

```
ExponentialDivisors[1]={1};ExponentialDivisors[n_]:=Module[{ },
  {pr,pows}=Transpose@FactorInteger[n];
  divpowers=Distribute[Divisors[pows],List];Sort[Times@@(pr^Transpose
[divpowers])]];properexponentialdivisorsum[k_]:=Plus@@ExponentialDivisors[k]-
k;ExponentialAmicableNumberQ[k_]:=If[Nest[properexponentialdivisorsum,k,2]==k && !
properexponentialdivisorsum[k]==k,True,False];data1=Select[Range[5 10^6],ExponentialAmicableNumberQ
[#] &];data2=properexponentialdivisorsum[#] &/@data1;data3=Table[{data1[[k]],data2[[k]]},{k,1,Length
[data1]}];data4=Select[data3,First[#]<Last[#] &];Table[Last[data4[[k]]],{k,1,Length[data4]}]
```

**Best wishes****Ant**

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