

CIS 3362 Quiz #4: Number Theory Solutions

Date: 10/25/2024

Name: _____

1) (6 pts) Determine the Prime Factorization of 1,518,735,400.

2) (8 pts) Determine $\varphi(1,518,735,400)$ **and give your answer in prime factorized form.**

3) (6 pts) Determine the remainder when 16^{7623} is divided by 509. Note that 509 is prime. **For full credit use Fermat's Theorem.**

4) (6 pts) Determine the remainder when 987^{249602} is divided by 27625. **For full credit use Euler's Theorem.**

```

int* getRelPrime(int n, int* szPtr) {

    int* relprime = malloc(sizeof(int)*n);
    for (int i=0; i<n; i++) relprime[i] = 1;

    /*** PLEASE ADD CODE HERE ***/

    int* res = calloc(n, sizeof(int));
    *szPtr = 0;
    for (int i=0; i<n; i++)

        if ( _____ )

            res[(*szPtr)++] = _____ ;

    res = realloc(res, sizeof(int)*(*szPtr));
    return res;
}

```

8) (1 pts) What animal is in the logo of the local eatery, Pig Floyd's?
