## MTH 2215 Test 3

 ${\rm Spring}~2021$ 

Name \_\_\_\_

## Show CLEARLY how you arrive at your answers.

- 1. Give the quotient and the remainder when:
  - (a) 859 is divided by 25.
  - (b) -481 is divided by 29.

2. Evaluate the quantity  $85 \pmod{21} \equiv$ 

3. Convert the decimal (base 10) representation of 341 to the equivalent hexadecimal (base 16) expansion

4. Determine whether the integers below are congruent modulo the given number:

(a)  $228 \equiv 58 \pmod{5}$ 

(b)  $90 \equiv 203 \pmod{17}$ 

5. Convert the decimal (base 10) representation of 121 to the equivalent binary (base 2) expansion

6. Convert the binary (base 2) representation of  $(1101010)_2$  into the equivalent decimal (base 10) expansion

7. Convert the octal (base 8) representation of  $(4172)_8$  into the equivalent binary (base 2) expansion

8. Convert the binary (base 2) representation of  $(11 \ 110 \ 011)_2$  into the equivalent octal (base 8) representation.

9. Convert the hexadecimal (base 16) representation of  $(EB5)_{16}$  into the equivalent binary (base 2) expansion

10. Convert the binary (base 2) representation of  $(0101 \ 1011 \ 1001)_2$  into the equivalent hexadecimal (base 16) representation

11. Convert the hexadecimal (base 16) representation of  $A39_{16}$  into the equivalent base 10 representation

12. What is the greatest common divisor of the integers  $a = 2^3 \cdot 3^4 \cdot 5^2$  and  $b = 2^2 \cdot 3^4 \cdot 5^2$ ?