

San Jose State University  
Department of Mathematics, College of Science  
Fall 2009  
MATH 42, Discrete Mathematics  
Answers of HW5

Please ask if you do not understand the answers.

Please report if you find any errors, typos.

**3.4 # 1**

- a) YES
- b) NO
- c) YES
- d) NO

**3.4 # 10**

- a)  $44 = 8(5) + (4)$
- b)  $777 = 21(37) + (0)$
- c)  $-123 = 19(-7) + (10)$
- d)  $-1 = 23(-1) + (22)$
- e)  $-2002 = 87(-24) + (86)$
- f)  $0 = 17(0) + (0)$
- g)  $1234567 = 1001(1233) + (334)$
- h)  $-100 = 101(-1) + (1)$

**3.4 # 14**

By the division algorithm,  $a = dq + r$  where  $0 \leq r < d$ . Hence  $0 \leq \frac{r}{d} < 1$  and so  $\lfloor \frac{a}{d} \rfloor = \lfloor q + \frac{r}{d} \rfloor = q$ . Consequently,  $r = a - d\lfloor \frac{a}{d} \rfloor$ .

**3.4 # 16**

- a) 1
- b) 4
- c) 3
- d) 9

**3.4 # 19**

- a) NO
- b) NO
- c) YES
- d) NO