

Homework 7

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Due 10/3

1. $19 = 14 + 5$

$$\gcd(19, 14) = \gcd(19, 5) = 1$$

$$14 = 5 \cdot 3 - 1$$

$$14 = (19 - 14) \cdot 3 - 1$$

$$1 = 3(19) - 3(14) - 14$$

$$1 = 3(19) - 4(14)$$

$$1 + 4(14) = 3(19)$$

Give: 3 19 dollar coins

Get: 4 14 dollar coins & coffee

2. $109 = 95 + 14$

$$\gcd(109, 95) = \gcd(109, 14) = 1$$

~~95~~ = cannot find a value for

$$109 \text{ or } 95 = 14x \pm 1$$

3. $37 - 16 = 21$

$$\gcd(37, 16) = \gcd(37, 21) = 1$$

$$148 = 147 + 1$$

$$37 \cdot 4 = 21 \cdot 7 + 1$$

$$4(37) = (37 - 16) \cdot 7 + 1$$

$$4(37) = 7(37) - 7(16) + 1$$

$$4(37) + 7(16) = 7(37) + 1$$

4×37 ~~poor~~ ^{kg} weights, 7×16 kg weights on Left Side
 7×37 kg weights, coffee on Right Side