1. Show that $(56,72) = 56x + 72y$

72	1	0	56	0	1	]	X 1
56	0	1	16	1	-1	]	X 3
16	1	-1	8	-3	4	]	X 2
8	-3	4	0				

8 = 72*(-3)+56*4

$$d = 8$$
$$x = 4$$
$$y = -3$$

2. Show that $(1769, 2378) = 1769x + 2378y$

2378	1	0	1769	0	1]X1
1769	0	1	609	1	-1] X2
609	1	-1	551	-2	3]X1
551	-2	3	58	3	-4]X9
58	3	-4	29	-29	39
29	-29	39			

$$d = 29$$
$$x = 39$$
$$y = -29$$

3. Discuss which of the following equations can be solved?

(a) $6x + 51y = 22$ Not Solvable

(b) $33x + 14y = 115$ Solvable

(c) $14x + 35y = 93$ Not Solvable

4.Solve $56x + 72y = 40$

$$a = 56, b = 72, d = 8$$

8 = 72*(-3)+56*4

Multiply above equation by 5

40 = 72*(-15)+56*(20)

$x_0 = 20, y_0 = -15$

$$x = x_0 + 9t = 20 + 9t$$
$$y = y_0 - 7t = -15 - 7t$$

t is an integer.

5. $(4862542, 1754) = 4862542x + 1754y$

Find d, x, y