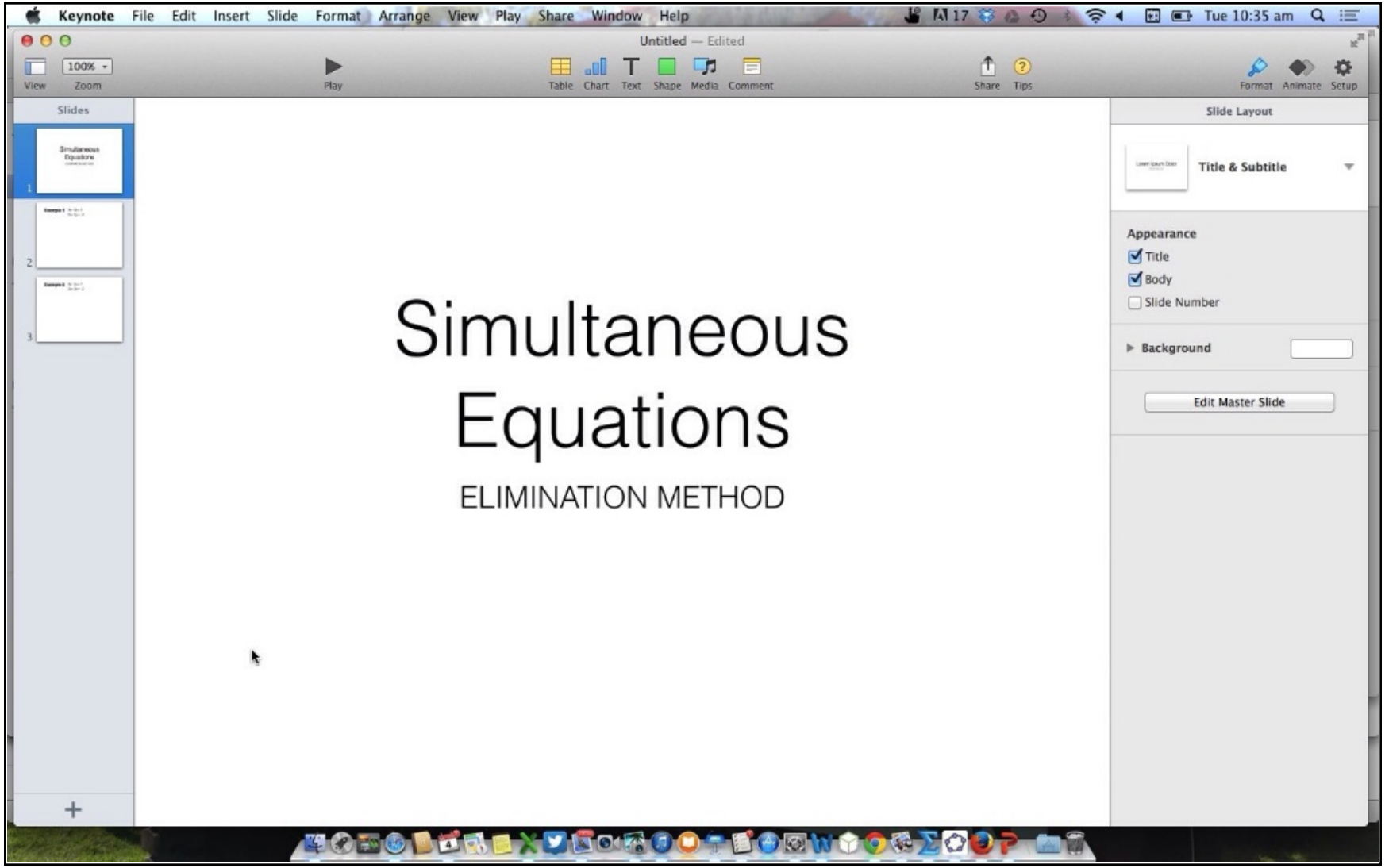
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Simultaneous Equations
ELIMINATION METHOD

Example 1 $3x-2y=3$ — (1)

$5x+2y=-5$ — (2)

Eq^(1) + Eq^(2) / adding 5 to both sides of Eqn

$(3x-2y)+(5x+2y)=3+(-5)$

$8x=-2$

$x=-\frac{1}{4}$

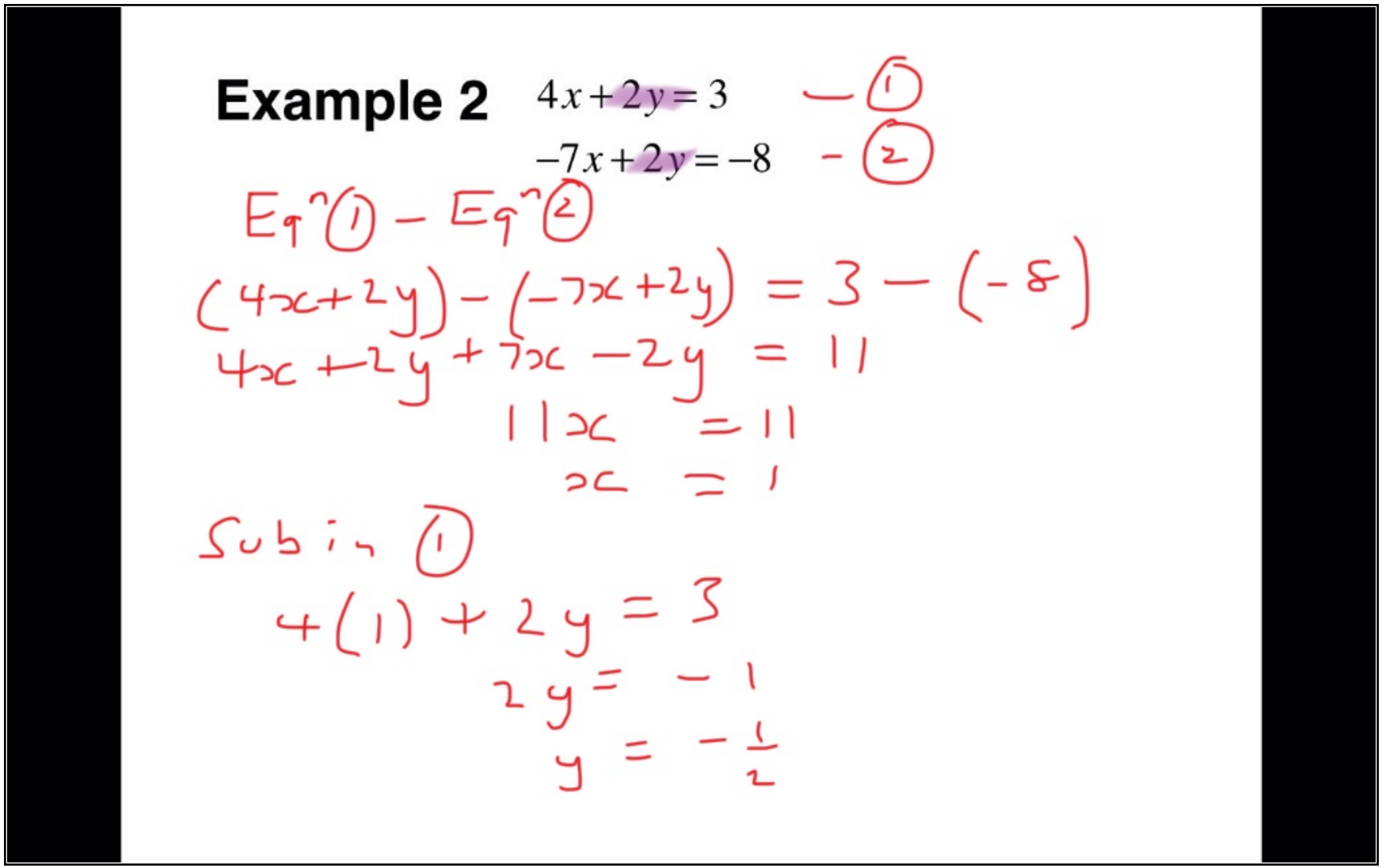
Substitute into (1)

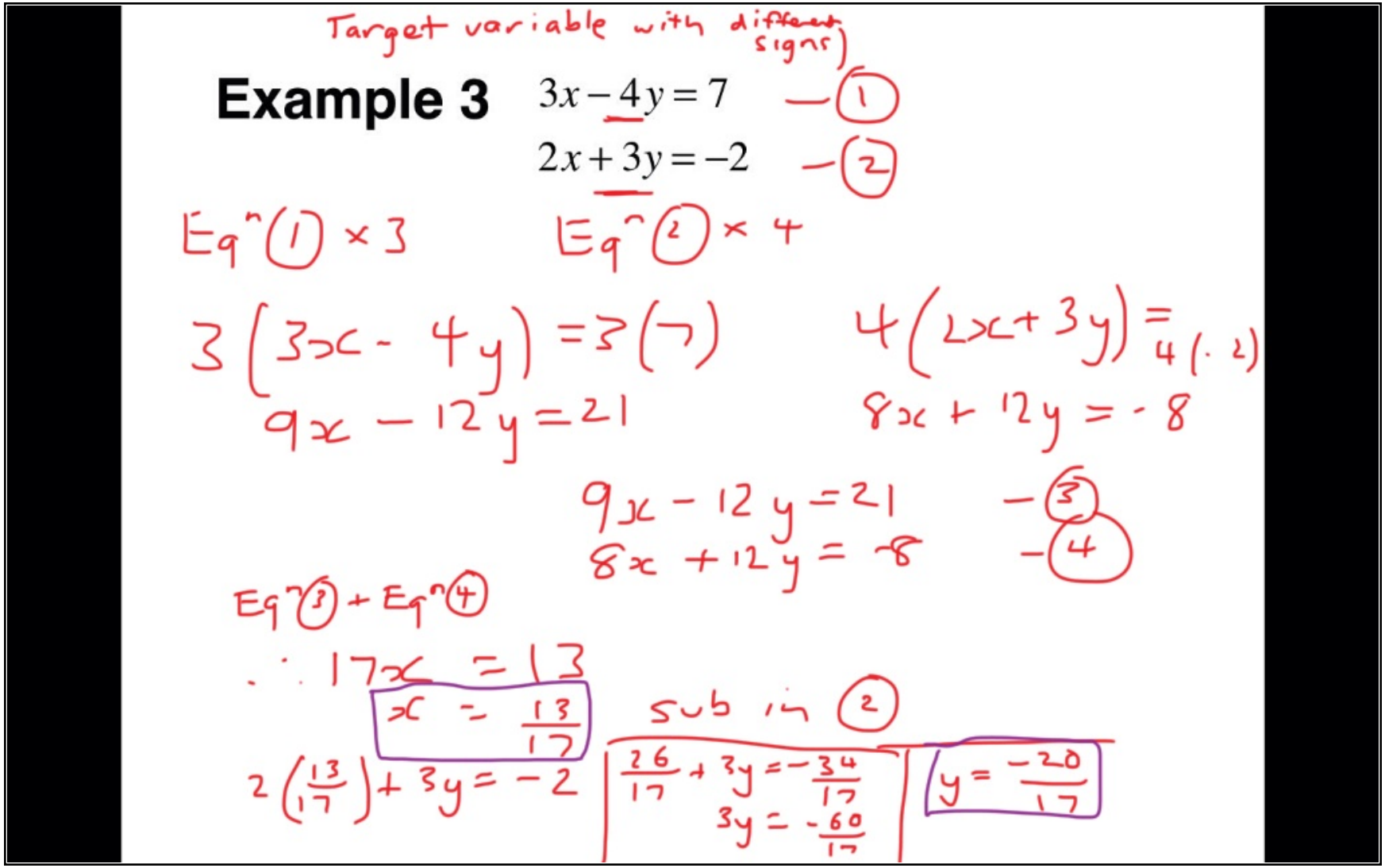
$3\left(-\frac{1}{4}\right)-2y=3$

$-\frac{3}{4}-2y=3$

$-2y=\frac{15}{4}$

$y=-\frac{15}{8}$


Example 2
4x + 2y = 3 — (1)
−7x + 2y = −8 — (2)
Eq^n (1) − Eq^n (2)
(4x + 2y) − (−7x + 2y) = 3 − (−8)
4x + 2y + 7x − 2y = 11
11x = 11
x = 1
Sub in (1)
4(1) + 2y = 3
2y = −1
y = −1/2


Target variable with different signs
Example 3
3x − 4y = 7 — (1)
2x + 3y = −2 — (2)
Eqn (1) × 3
Eqn (2) × 4
3(3x − 4y) = 3(7)
9x − 12y = 21
4(2x + 3y) = 4(−2)
8x + 12y = −8
9x − 12y = 21 — (3)
8x + 12y = −8 — (4)
Eqn (3) + Eqn (4)
∴ 17x = 13
x = 13/17
sub in (2)
2(13/17) + 3y = −2
26/17 + 3y = −34/17
3y = −60/17
y = −20/17

Example 4 $2x-5y=9$ — (1)

$-3x+7y=-1$ — (2)

Eq^(1) × 3 + Eq^(2) × 2

$-y = 25$

$y = -25$

Sub in (1)

$2x-5(-25)=9$

$2x+125=9$

$2x=-116$

$x=-58$

(3) $6x-15y=27$

(4) $-6x+14y=-2$

Eq^(3) + Eq^(4)

$-y = 25$

$y = -25$

Ex 2 G.

Example 4

$2x - 5y = 9$ — (1)

$-3x + 7y = -1$ — (2)

Eq^(1) × 3 + Eq^(2) × 2

$-y = 25$

$y = -25$

Sub in (1)

$2x - 5(-25) = 9$

$2x + 125 = 9$

$2x = -116$

$x = -58$

(3) $6x - 15y = 27$

(4) $-6x + 14y = -2$

Eq^(3) + Eq^(4)

$-y = 25$

$y = -25$

Ex 2 G.