1. $2ax - 1 + 3a = 0$

$2ax = 1 - 3a$

$Se\ a = 0:\ 0x = 1 \quad impossibile$

$Se\ a \neq 0:\ x = \frac{1-3a}{2a}$

2. $x(a^2 + 3x - 1) = a(a - 1) + 3x^2$

$a^2x + 3x^2 - x = a^2 - a + 3x^2$

$x\,(a^2 - 1) = a(a - 1)$

$x\,(a - 1)(a + 1) = a(a - 1)$

$Se\ a = 1: \quad 0x = 0 \quad indeterminata$

$Se\ a = -1: \quad 0x = 2 \quad impossibile$

$Se\ a \neq \pm 1: \quad x = \frac{a}{a+1}$

3. $x\,(3a - 1) + bx = a\,(3x + 1)$

$3ax - x + bx = 3ax + a$

$(b - 1)x = a$

$Se\ b = 1\ e\ a = 0: \quad 0x = 0 \quad indeterminata$

$Se\ b = 1\ e\ a \neq 0: \quad 0x = a \quad impossibile$

$Se\ b \neq 1: \quad x = \frac{a}{b-1}$

4. $a - x = \frac{a + x}{2a} - 1$ $\qquad C.E.: a \neq 0$

$2a^2 - 2ax = a + x - 2a$

$x + 2ax = a + 2a^2$

$x\,(2a + 1) = a(2a + 1)$

$Se\ a = -\frac{1}{2}: \quad 0x = 0 \quad indeterminata$

$Se\ a = 0: \quad l'equazione\ perde\ significato$

$Se\ a \neq 0\ e\ a \neq -\frac{1}{2}: \quad x = a$