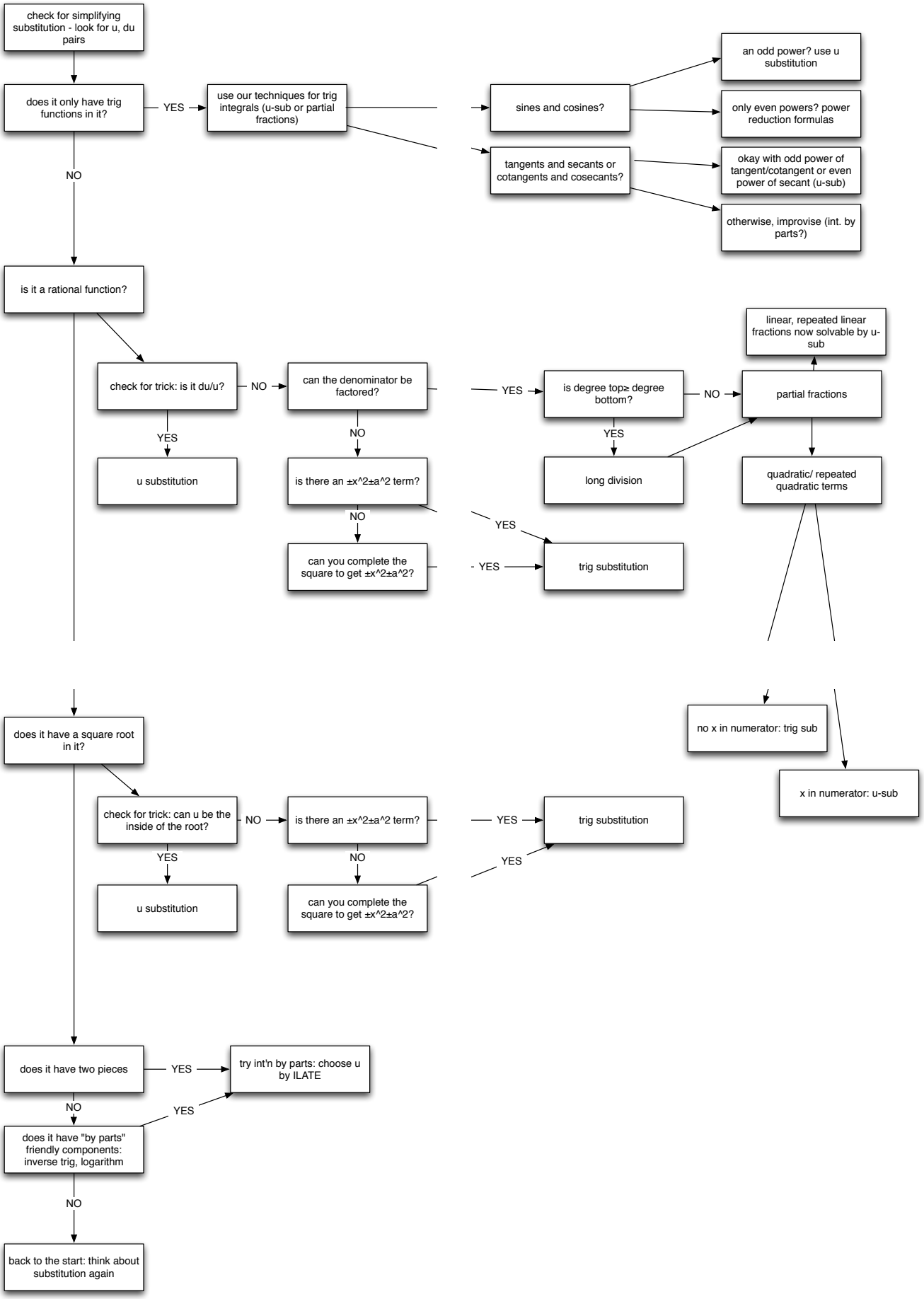
check for simplifying substitution - look for u, du pairs
does it only have trig functions in it?
YES
use our techniques for trig integrals (u-sub or partial fractions)
sines and cosines?
an odd power? use u substitution
only even powers? power reduction formulas
tangents and secants or cotangents and cosecants?
okay with odd power of tangent/cotangent or even power of secant (u-sub)
otherwise, improvise (int. by parts?)
NO
is it a rational function?
check for trick: is it du/u?
NO
can the denominator be factored?
YES
is degree top≥ degree bottom?
NO
partial fractions
linear, repeated linear fractions now solvable by u-sub
YES
u substitution
NO
is there an ±x^2±a^2 term?
YES
long division
quadratic/ repeated quadratic terms
NO
can you complete the square to get ±x^2±a^2?
YES
trig substitution
no x in numerator: trig sub
x in numerator: u-sub
does it have a square root in it?
check for trick: can u be the inside of the root?
NO
is there an ±x^2±a^2 term?
YES
trig substitution
YES
u substitution
NO
can you complete the square to get ±x^2±a^2?
YES
does it have two pieces
YES
try int'n by parts: choose u by ILATE
NO
YES
does it have "by parts" friendly components: inverse trig, logarithm
NO
back to the start: think about substitution again