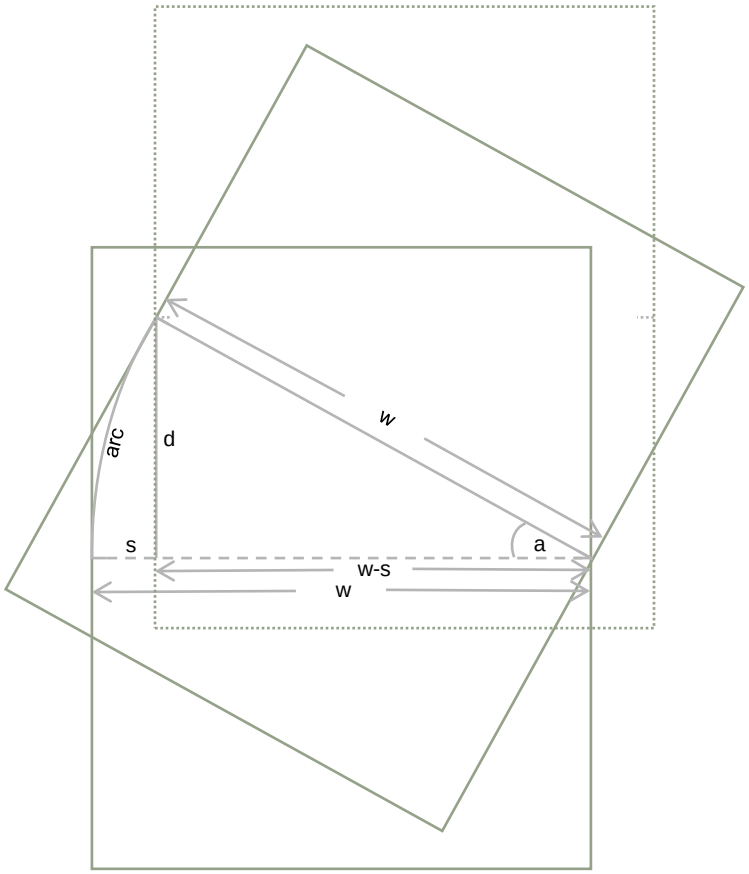
How to slide a robot without an H drive



s = distance to slide, w=width of the robot, d = how far back the robot moved
arc = how far the wheel moves to make the turn

What's the angle the robot has to turn?
cos(a) = (w-s) / w
a = acos((w-s) / w)

How far does one side travel to make the turn?
arc = (a / 2Π) * (2Π * w) (arc is the fraction of the circumference as 'a' is the fraction of 2Π radians (360 degrees))
arc = a * w
arc = acos((w-s) / w) * w

How far has the robot backed up?
sin(a) = d / w
d = w * sin(a)

So, the sequence of movements is as follows (to slide right 's' inches):

1. Drive left side back 'arc'
2. Drive right side back 'arc'
3. Drive both sides forward 'd'

To slide right:

1. Drive right side back 'arc'
2. Drive left side back 'arc'
3. Drive both sides forward 'd'