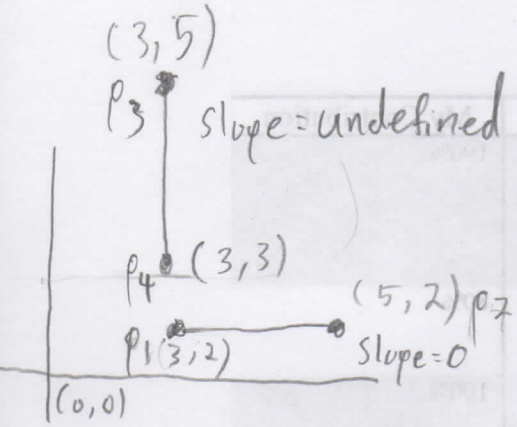
33.1-2



In this case, when $\overline{p_1p_2}$ has an endpoint p_1 that is colinear with $\overline{p_3p_4}$ and intersects $\overline{p_3p_4}$'s line perpendicularly, the colinear endpoint p_1 will pass the x-dimension test despite the fact that the segments do not intersect. The y-dimension test guards against this potential failure.

33.2-8

Because ANY-SEGMENTS-INTERSECT only returns a true or false value, it need only be able to detect <u>at least</u> one intersection if it exists and the absence of intersections if there are none. A case in which three lines intersect does not affect the latter requirement, since by definition a three-way intersection rules out a scenario in which the algorithm need return false. When the algorithm encounters a three-way intersection, it won't be able to tell that the intersection involves three segments but it will be able to see two of them intersecting. When the sweep line lands at an event point that can detect an intersection, there will be one line directly above the event point, one line directly below the event point, and a third line either above or below one of these two. Since the sweep line only looks at the lines directly above and below, it will return true if they intersect. The third line may intersect as well and, even though the algorithm did not consider its existence, it still returns the correct result.