Graphing guidelines for tangent, cotangent, secant and cosecant graphs:

TO GRAPH ONE PERIOD OF $y = a \tan (bx + c) + d$:

Period = π/b
Midline $y = d$
Phase Shift = –c/b

At x = Phase Shift	y = Midline
At x = Phase Shift + ¼ Period	y = Midline + a
At x = Phase Shift – ¼ Period	y = Midline – a
At x = Phase Shift ± 2 * ¼ Period	vertical asymptote

TO GRAPH ONE PERIOD OF $y = a \cot (bx + c) + d$:

Period = π/b
Midline $y = d$
Phase Shift = –c/b

At x = Phase Shift	vertical asymptote
At x = Phase Shift + ¼ Period	y = Midline + a
At x = Phase Shift + 2 * ¼ Period	y = Midline
At x = Phase Shift + 3 * ¼ Period	y = Midline – a
At x = Phase Shift + 4 * ¼ Period	vertical asymptote

TO GRAPH $y = a \csc (bx + c) + d$:

Graph $y = a \sin (bx + c) + d$

At every point where the sine graph crosses its Midline		vertical asymptote
Between vertical asymptotes:	if sine graph has a hill	valley (touching hill)
	if sine graph has a valley	hill (touching valley)

TO GRAPH $y = a \sec (bx + c) + d$:

Graph $y = a \cos (bx + c) + d$

At every point where the cosine graph crosses its Midline		vertical asymptote
Between vertical asymptotes:	if cosine graph has a hill	valley (touching hill)
	if cosine graph has a valley	hill (touching valley)