Turn Performance Charts

Bank angle in coordinated turn	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°
Load factor	1.0 G	1.02 Gs	1.06 Gs	1.15 Gs	1.31 Gs	1.56 Gs	2.0 Gs	2.92 Gs	5.76 Gs	infinite
Stall speed increase	0%	1%	3%	7%	14%	25%	41%	71%	140%	infinite

Note: Load factor = 1 ÷ cosine of bank angle, and stall speed increase = square root of load factor

Figure 1 Load Factor & Stall Speed Increase vs. Bank Angle (from The Proficient Pilot by Barry Schiff)

Effect of True Airspeed and Bank Angle on Rate of Turn and Turn Radius

True Airspeed	Bank Angle 10°	20°	30°	40°	50°	60°	70°	80°
50 knots	3.8°/s 1,259 ft.	7.9°/s 610 ft.	12.6°/s 385 ft.	18.3°/s 265 ft.	26.0°/s 186 ft.	37.8°/s 128 ft.	60.0°/s 81 ft.	124°/s 39 ft.
100 knots	1.9°/s 5,037 ft.	4.0°/s 2,440 ft.	6.3°/s 1,538 ft.	9.2°/s 1,058 ft.	13.0°/s 745 ft.	18.9°/s 513 ft.	30.0°/s 323 ft.	61.9°/s 157 ft.
150 knots	1.3°/s 1.9 nm	2.6°/s 5,490 ft.	4.2°/s 3,461 ft.	6.1°/s 2,381 ft.	8.7°/s 1,677 ft.	12.6°/s 1,154 ft.	20.0°/s 727 ft.	41.2°/s 352 ft.
200 knots	1.0°/s 3.3 nm	2.0°/s 1.6 nm	3.1°/s 1.0 nm	4.6°/s 4,234 ft.	6.5°/s 2,981 ft.	9.4°/s 2,051 ft.	15.0°/s 1,293 ft.	30.9°/s 626 ft.
250 knots	.8°/s 5.2 nm	1.6°/s 2.5 nm	2.6°/s 1.6 nm	3.7°/s 1.1 nm	5.2°/s 4,658 ft.	7.6°/s 3,205 ft.	12.0°/s 2,020 ft.	24.8°/s 979 ft.

$$\text{Rate of turn (degrees/second)} = \frac{(1{,}091)\,(\text{tangent of bank angle})}{(\text{true airspeed in knots})}$$

$$\text{Turn radius} = \frac{(\text{true airspeed in knots})^2}{(11.26)\,(\text{tangent of bank angle})}$$

Figure 2 Effect of TAS and Bank Angle on Turn and Radius (from The Proficient Pilot by Barry Schiff

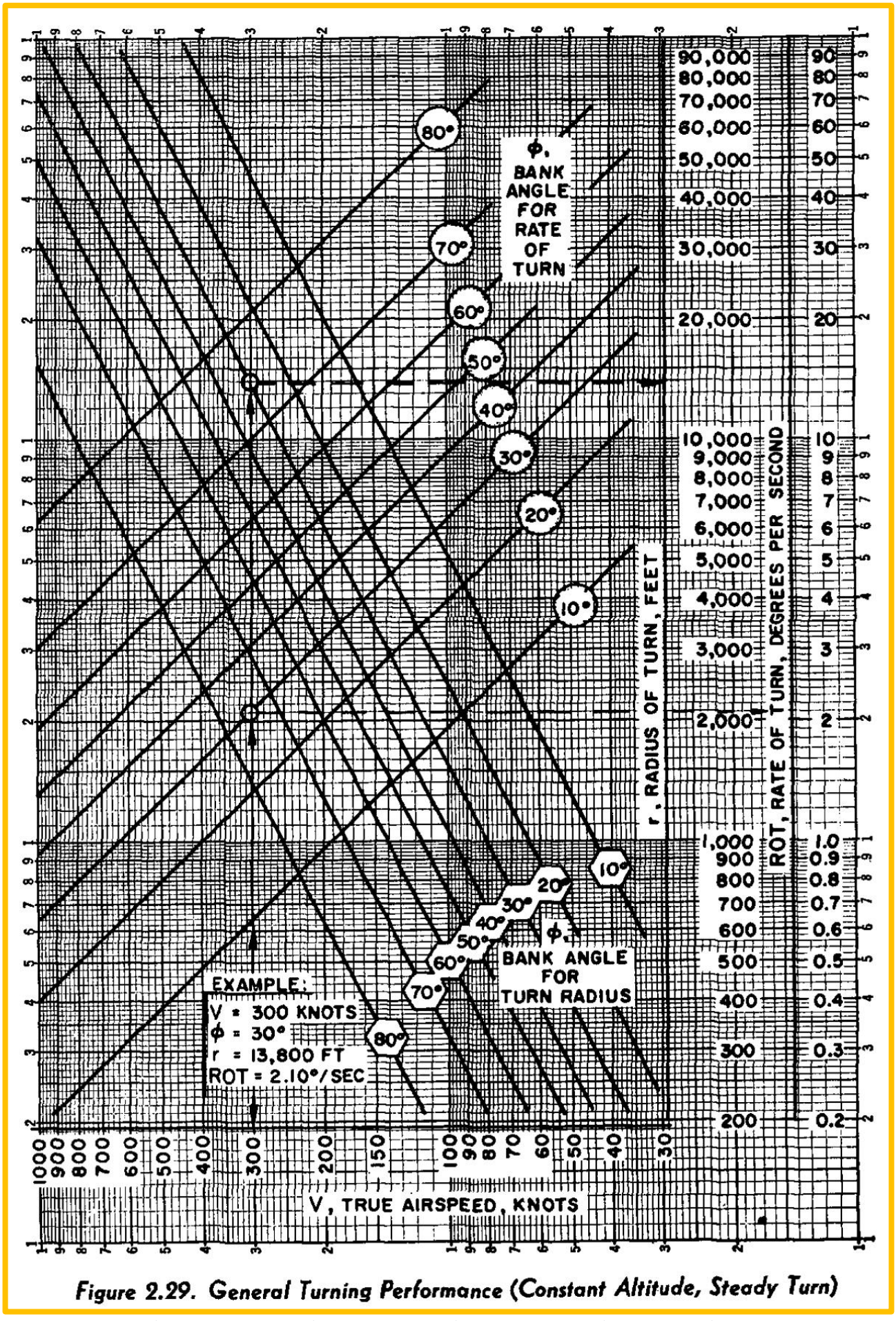

Figure 2.29. General Turning Performance (Constant Altitude, Steady Turn)

Figure 3 Bank Angle & Airspeed vs. Turn Radius (from Aerodynamics for Naval Aviators)