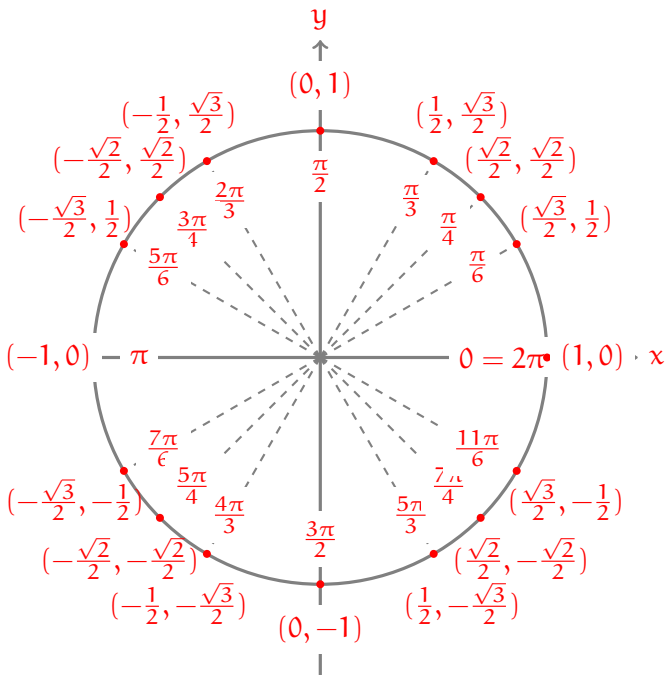

Integral Formulas.

- $\int \frac{1}{1+t^2}\,dt = \arctan t + C$
- $\int \frac{1}{\sqrt{1-t^2}}\,dt = \arcsin t + C$
- $\int \frac{1}{t}\,dt = \ln|t| + C$

Trig Identities.

- power reduction: $\cos^2\theta = \frac{1}{2} + \frac{1}{2}\cos 2\theta$
  $\sin^2\theta = \frac{1}{2} - \frac{1}{2}\cos 2\theta$
- double angle: $\sin 2\theta = 2\sin\theta\cos\theta$
  $\cos 2\theta = \cos^2\theta - \sin^2\theta$

A1 Formulas.

- $\vec{v}\cdot\vec{w} = \|\vec{v}\|\|\vec{w}\|\cos\theta$
- $\|\vec{v}\times\vec{w}\| = \|\vec{v}\|\|\vec{w}\|\sin\theta =$ [parallelogram area]
- $|\vec{v}\cdot(\vec{w}\times\vec{r})| =$ [parallelepiped volume]
- $\text{proj}_{\vec{v}}(\vec{w}) = \left(\frac{\vec{v}\cdot\vec{w}}{\vec{v}\cdot\vec{v}}\right)\vec{v}$
- $\text{comp}_{\vec{v}}(\vec{w}) = \frac{\vec{v}\cdot\vec{w}}{\|\vec{v}\|}$

A2 Formulas.

- distance from point B to plane $\mathcal{P}$ with normal $\vec{n}$:
  $\frac{|\vec{AB}\cdot\vec{n}|}{\|\vec{n}\|}$ where A is on $\mathcal{P}$
- distance from point B to line ℓ with direction $\vec{v}$:
  $\frac{\|\vec{AB}\times\vec{v}\|}{\|\vec{v}\|}$ where A is on ℓ

A3 Formulas. Standard equations.

- paboloid: $z = x^2 + y^2$
- saddle: $z = x^2 - y^2$
- 1–sheeted hyperboloid: $x^2 + y^2 - z^2 = 1$
- 2–sheeted hyperboloid: $-x^2 - y^2 + z^2 = 1$
- ellipsoid: $x^2 + y^2 + z^2 = 1$
- double–cone: $z^2 = x^2 + y^2$