

Chapter 10

Trig Graphs, Identities, and Equations

10.1 Graph Sine, Cosine, Tangent

- 1. $y = a \cdot \sin bx$ 2. $y = a \cdot \cos bx$
- Graph is a wave
- Domain: all real
- Range: tied to the amplitude
- Amplitude: $|a|$
- Period: $\frac{2\pi}{|b|}$
- 5 key points occur at $0, \frac{\pi}{2}, \pi, \frac{3\pi}{2}, 2\pi$

- 3. $y = a \cdot \tan bx$
- No amplitude
- Asymptote: HA
- Period : $\frac{\pi}{|b|}$
- Critical points: $0, \frac{\pi}{4}, \frac{\pi}{2}, \frac{3\pi}{4}, \pi$

10.2 Translate and Reflect Trig Graphs

- 1. $y = a \cdot \sin b(x - h) + k$
- 2. $y = a \cdot \cos b(x - h) + k$
- 3. $y = a \cdot \tan b(x - h) + k$

- h = horizontal shift
- k = vertical shift
- Midline: $y = k$
- Key points: $h + \frac{1}{4} \cdot \text{period}$

10.3 Verify Trig Identities

- Pythagorean Identities: $\cos^2 \theta + \sin^2 \theta = 1$
 - See Properties in blue box
- 1. Simplify: Use Identities
- 2. Verify: make right side look like left side

10.4 Solve Trig Equations

- Solve Equation for Angle(θ)
 - 1. Set = 0
 - 2. GCF
 - 3. Factor
 - 4. Quadratic Formula
- Infinite Solutions
- List only general solutions or $0 \leq \theta \leq 2\pi$