5.2 - Sum and Difference Identities

Sine/Cosine Identities

RED - Provided on quiz

Sum/Difference of Angles

1. $\cos(\alpha - \beta) = \cos\alpha\cos\beta + \sin\alpha\sin\beta$
2. $\cos(\alpha + \beta) = \cos\alpha\cos\beta - \sin\alpha\sin\beta$
3. $\sin(\alpha - \beta) = \sin\alpha\cos\beta - \cos\alpha\sin\beta$
4. $\sin(\alpha + \beta) = \sin\alpha\cos\beta + \cos\alpha\sin\beta$

Cofunctions

5. $\cos\theta = \sin(\frac{\pi}{2} - \theta)$
6. $\sin\theta = \cos(\frac{\pi}{2} - \theta)$

Tangent Identities

7. $\tan(A + B) = \dfrac{\tan A + \tan B}{1 - \tan A \tan B}$
8. $\tan(A - B) = \dfrac{\tan A - \tan B}{1 + \tan A \tan B}$

5.3 - Double-Angle Identities

9. $\sin(2A) = 2\sin A \cos A$

10. $\cos(2A) = 1 - 2\sin^2 A$

11. $\cos(2A) = \cos^2 A - \sin^2 A$

12. $\cos(2A) = 2\cos^2 A - 1$

13. $\tan(2A) = \dfrac{\sin(2A)}{\cos(2A)}$

14. $\tan(2A) = \dfrac{2\tan A}{1 - \tan^2 A}$

5.4 - Half-Angle Identities

RED - Provided on quiz

15. $\sin\left(\frac{\theta}{2}\right) = \pm\sqrt{\frac{1-\cos\theta}{2}}$

16. $\cos\left(\frac{\theta}{2}\right) = \pm\sqrt{\frac{1+\cos\theta}{2}}$

17. $\tan\left(\frac{A}{2}\right) = \pm\sqrt{\frac{1-\cos A}{1+\cos A}}$

18. $\tan\left(\frac{A}{2}\right) = \frac{1-\cos A}{\sin A}$

19. $\tan\left(\frac{A}{2}\right) = \frac{\sin A}{1+\cos A}$