

Sample Midterm 2

Problem 1. (a) Determine whether the following function is even, odd, or neither

$$y = x \sin x \cos x$$

(b) Graph $y = \frac{1}{2} \sin(2x + \frac{\pi}{4})$.

Problem 2. (a) Find $\tan(\arcsin x)$.

(b) Graph $y = \arctan(2x + 3)$.

Problem 3. (a) Verify

$$\sec^2 x + \csc^2 x = \sec^2 x \csc^2 x$$

(b) Verify

$$\frac{\csc \theta}{\cot \theta + \tan \theta} = \cos \theta$$

Problem 4. Compute without using a calculator

(a) $\sin \left[\arccos \frac{1}{2} + \arcsin(-1) \right]$

(b) $\cos \left[\arcsin\left(-\frac{3}{5}\right) + \arccos\left(-\frac{4}{5}\right) \right]$

Problem 5. Are the following equations identities?

(a) $\sin 3x - \sin x = 2 \cos 2x \sin x$

(b) $\sin x \cos y = \sin x + \cos y$