

Exam 4 will be given on Wednesday, April 25, 2007. The exam will be cumulative, with emphasis on the topics covered since the last exam. Be sure to review recent homework assignments and classwork in addition to the problems on this sheet.

Those topics are: trig equations (linear, quadratic), finding other trig functions given one trig function, sum and difference formulas, double-angle and half-angle formulas, and identities and equations involving those formulas.

The following formulas will be given to you during the exam, so you do not need to memorize them, but you should be able to apply them to problems.

Formulas

Functions of the Sum of Two Angles

$$\sin(A + B) = \sin A \cos B + \cos A \sin B$$

$$\cos(A + B) = \cos A \cos B - \sin A \sin B$$

Functions of the Difference of Two Angles

$$\sin(A - B) = \sin A \cos B - \cos A \sin B$$

$$\cos(A - B) = \cos A \cos B + \sin A \sin B$$

Functions of the Double Angle

$$\sin 2A = 2 \sin A \cos A$$

$$\cos 2A = \cos^2 A - \sin^2 A$$

$$\cos 2A = 2 \cos^2 A - 1$$

$$\cos 2A = 1 - 2 \sin^2 A$$

Functions of the Half Angle

$$\sin \frac{1}{2} A = \pm \sqrt{\frac{1 - \cos A}{2}}$$

$$\cos \frac{1}{2} A = \pm \sqrt{\frac{1 + \cos A}{2}}$$

- If $\sin A = -\frac{3}{5}$, $\cos B = -\frac{5}{13}$, and angles A and B are in Quadrant III, find $\cos(A - B)$.
- A designer who is planning to install an elliptical mirror is laying out the design on a coordinate grid. Which equation could represent the elliptical mirror?
 - $x^2 + y^2 = 144$
 - $y = 4y^2 + 144$
 - $x^2 = 144 + 36y^2$
 - $x^2 + 4y^2 = 144$
- Find, to the *nearest degree*, all values of x in the interval $0^\circ \leq x \leq 360^\circ$ that satisfy the equation $3\cos 2x + \cos x = -2$.
- Find all values of θ in the interval $0^\circ \leq \theta \leq 360^\circ$ that satisfy the equation $\tan \theta + 2 \tan \theta \sin \theta = 0$.

