**Math 1316 – Trigonometry** ***Exam* 3** ***Review***

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**1.** If $\cos A = -\frac{5}{13}$ with $A$ in QII and $\tan B = \frac{15}{8}$ with $B$ in QIII, find the exact value of each of the following:

*a)* $\cos(A-B)$ *b)* $\cos 2B$ *c)* $\sin(A-B)$ *d)* $\tan(A-B)$

**2.** If $\sin\theta = \frac{15}{17}$, $0 < \theta < \frac{\pi}{2}$, find

*a)* $\cos 2\theta$ *b)* $\sin 2\theta$ *c)* $\tan 2\theta$ *d)* $\sin\frac{\theta}{2}$ *e)* $\cos\frac{\theta}{2}$

**3.** Evaluate:

*a)* $\tan\left(2\arcsin\frac{2}{5}\right)$ *b)* $\sec\left(\arctan\frac{x-2}{2}\right)$ *c)* $\tan\left(\operatorname{arcsec}\frac{\sqrt{x^2+25}}{x}\right)$

**4.** Find all solutions in the interval $0 \le x < 2\pi$

*a)* $\tan^2 x = 1 - \sec x$

*b)* $4\sin^2 x \tan x = \tan x$

*c)* $\sin 2x + \sin x + 2\cos x + 1 = 0$

*d)* $2\sin^2 x + 3\cos x = 0$

*e)* $3\sec^2 x - 4 = 0$

*f)* $\sqrt{3}\cos x + \sin 2x = 0$

*g)* $\cot x + \cos x = 0$

*h)* $\cos 2x + 3\cos x + 2 = 0$

*i)* $2\cos^2 x - 3\cos x + 1 = 0$

*j)* $\sin^2 x = 5(\cos\theta + 1)$

**5.** Find all solutions in the interval $0 \le \theta < 360^\circ$:. Approximate the solutions to the nearest tenth of a degree

*a)* $4\sin\theta\tan\theta = -3\tan\theta$ *b)* $2\sin\theta - 3\cos\theta = 0$

# *Answers*

**1.** *a*) $-\frac{140}{221}$ *b*) $-\frac{161}{289}$ *c*) $-\frac{171}{221}$ *d*) $\frac{171}{140}$

**2.** *a*) $-\frac{161}{289}$ *b*) $\frac{240}{289}$ *c*) $-\frac{240}{161}$ *d*) $\frac{3\sqrt{34}}{34}$ *e*) $\frac{5\sqrt{34}}{34}$

**3.** *a*) $\frac{4\sqrt{21}}{17}$ *b*) $\frac{1}{2}\sqrt{x^2-4x+8}$ *c*) $\frac{5}{x}$

**4.** *a*) $0, \frac{2\pi}{3}, \frac{4\pi}{3}$ *b*) $0, \frac{\pi}{6}, \frac{5\pi}{6}, \pi, \frac{7\pi}{6}, \frac{11\pi}{6}$ *c*) $\frac{2\pi}{3}, \frac{4\pi}{3}, \frac{3\pi}{2}$ *d*) $\frac{2\pi}{3}, \frac{4\pi}{3}$

*e*) $\frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}$ *f*) $\frac{\pi}{2}, \frac{3\pi}{2}, \frac{4\pi}{3}, \frac{5\pi}{3}$ *g*) $\frac{\pi}{2}, \frac{3\pi}{2}$ *h*) $\frac{2\pi}{3}, \pi, \frac{4\pi}{3}$

*i*) $0, \frac{\pi}{3}, \frac{5\pi}{3}$ *j*) $\pi$

**5.** *a*) $0^\circ, 180^\circ, 228.6^\circ, 311.4^\circ$ *b*) $56.3^\circ, 236.3^\circ$