

- 3.1 – Law of Sines  
3.3 – Law of Cosines  
3.4 – Vectors in the Plane

1. (5 pts) Solve the triangle on the right. I want *exact* solutions. No decimal approximations.

2. (5 pts) Find the *exact* value of  $\cos\left(\arcsin\left(\frac{5\pi}{3}\right)\right)$ .

3. (5 pts) Find *exact* values of  $\sin\left(\frac{u}{2}\right)$ ,  $\cos\left(\frac{u}{2}\right)$ , and  $\tan\left(\frac{u}{2}\right)$ ,  
given that  $\sin(u) = -\frac{3}{5}$  and  $\cos(u) < 0$ .

4. Consider the equation  $2\sin(4x) + 4\sin(2x) = 0$ .

a. (5 pts) Find all solutions  $x$ , in radians *and* degrees, to the equation in the interval  $[0, 2\pi)$ . I expect *exact* solutions.

b. (5 pts) Find *all* solutions  $x$ , in radians *and* degrees. Again, I expect *exact* solutions.

5. (5 pts) Find the *exact* value of  $\sin(2u)$ ,  $\cos(2u)$ ,  $\tan(2u)$ , given that  $\sin(u) = -\frac{3}{4}$  and  $\cos(u) > 0$ .

6. (5 pts) Re-write  $\sin(4x)\cos(5x)$  as a sum or difference.

