The following is a list of problems I consider midterm-worthy. This list of problems should serve as a good place to start studying, and it should not be consider a comprehensive list of problems from the sections we've covered. YOU are responsible for studying all the sections to be covered on the midterm.

1. Answer the following:
(a) Evaluate $\tan^{-1}(1)$.

(b) Draw and label the angles and sides of a 45°-45°-90° triangle and a 30°-60°-90° triangle.

(c) Write the double angle formula for sine.

(d) Write the formula for the law of sines.

2. (a) Give the amplitude, period, and horizontal shift for the the function $3\sin\left(x-\frac{\pi}{2}\right)$.

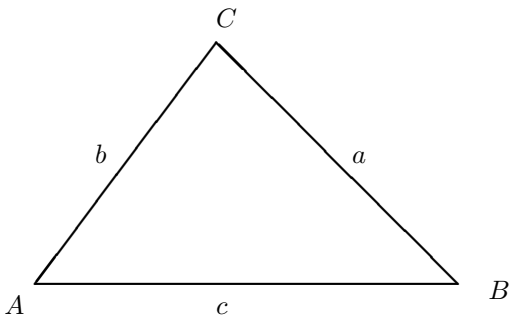
(b) Graph two full periods of $3\sin\left(x-\frac{\pi}{2}\right)$ and $3\csc\left(x-\frac{\pi}{2}\right)$ on the same graph.

3. (a) Show that

$$\sin\left(x - \frac{3\pi}{2}\right) = \cos x$$

(b) Show that $\sec x - \cos x = \sin x \tan x$

4. Solve for b in the triangle below:



when $a = 20$, $A = 30°$, and $B = 45°$.

5. Find the general solution for

$$2\sin^2 x + 3\cos x - 3 = 0$$

6. Use the power reducing formula to rewrite $\sin^2(x)\cos^2(x)$ in terms of the first power of cosine.

7. Write $\cos(\arctan 1 + \arccos x)$ as an algebraic expression of x.

8. Find the area of a triangle with sides of length $a = 4$, $b = 4$, and $c = 2$.