

MAT 126: Trigonometry
Review for Final Exam

1. $\tan A = \frac{2}{9}$ A is in quadrant III
 $\sec B = \frac{-7}{4}$ B is in quadrant II

Give exact values (simplified fractional/radical form) for the following:

(a) $\sin A =$ _____ (b) $\sin B =$ _____

(c) $\cos A =$ _____ (d) $\cos B =$ _____

(e) $\cot A =$ _____ (f) $\tan B =$ _____

(g) $\sec A =$ _____ (h) $\csc B =$ _____

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

(j) $\sin 2A =$

(k) $\tan \frac{A}{2}$

2. Convert the following:

(a) $18^\circ =$ _____ radians (b) $7\pi =$ _____ degrees

(c) $58.27^\circ =$ _____ degrees, minutes, seconds

(d) $33 \text{ rpm} =$ _____ radians/sec = _____ meters/sec if radius = 4m.

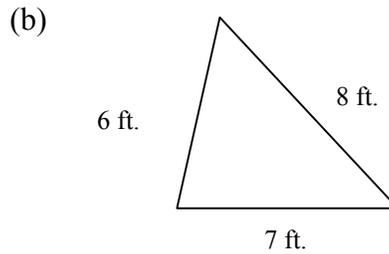
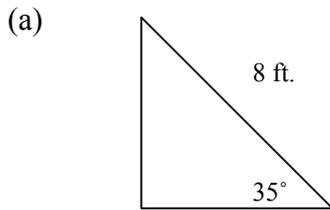
3. Solve for x in degrees in the interval $[0, 360)$:

(a) $\tan(3x - 4) = \cot(4x - 3)$

(b) $2\cos^2 x + \cos x - 1 = 0$

(c) $-2 \cos 2x = \sqrt{3}$

4. Solve the following triangles:



5. Solve the following:

- (a) A forest ranger is at a spot which has an angle of elevation of 22.5° to the top of a 200 foot tall tower. How far is the ranger from the base of the tower?
- (b) City B is 6 miles due east of City C. City A is 5 miles from C. The bearing from C to A is $S 45^\circ W$. Find the distance between cities A and B.
- (c) To approximate the speed of the current of a river, a circular paddle wheel with radius 4 feet is lowered into the water. If the current causes the wheel to rotate at a speed of 10 revolutions per minute, what is the speed of the current in miles per hour? (5280 feet = 1 mile)

6. Find the area of the following:

- (a) A field in the shape of a sector of a circle with central angle 40° and radius of 200 meters.
- (b) A triangular field with side measures of 50 meters, 75 meters, and 100 meters.

7. Graph each function over a two-period interval. Label the x and y axis with the appropriate values. Give the period and the amplitude.

(a) $y = 3 \sin (6x)$

(b) $y = 2 \cos (0.5x)$

8. The function $y = -2 + 5 \sin 3(x - \pi)$ has amplitude _____, period _____, phase shift _____ units to the _____ and has a vertical translation _____ units _____.

9. Give the exact value for the following:

(a) $\sin^{-1}(-1) =$ _____

(b) $\arccos(\sin (7\pi/6)) =$ _____

10. Solve for x. Use your calculator and round the value to 4 decimal places.

(a) $\cos^{-1} x = (\tan^{-1} (4/3))$

(b) $8 \sin^{-1} (x + 1) = \pi$