

# Precalculus

## Homework

### Definition of the trigonometric functions and basic computations

1. Convert from degrees to radians.

- |                  |                   |                     |
|------------------|-------------------|---------------------|
| (a) $15^\circ$ . | (h) $120^\circ$ . | (o) $360^\circ$ .   |
| (b) $30^\circ$ . | (i) $135^\circ$ . | (p) $405^\circ$ .   |
| (c) $36^\circ$ . | (j) $150^\circ$ . | (q) $1200^\circ$ .  |
| (d) $45^\circ$ . | (k) $180^\circ$ . | (r) $-900^\circ$ .  |
| (e) $60^\circ$ . | (l) $225^\circ$ . | (s) $-2014^\circ$ . |
| (f) $75^\circ$ . | (m) $270^\circ$ . |                     |
| (g) $90^\circ$ . | (n) $305^\circ$ . |                     |

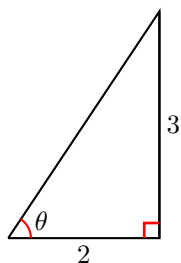
2. Convert from radians to degrees. The answer key has not been proofread, use with caution.

- |                         |                         |               |
|-------------------------|-------------------------|---------------|
| (a) $4\pi$ .            | (d) $\frac{4}{3}\pi$ .  | (g) 5.        |
| (b) $-\frac{7}{6}\pi$ . | (e) $-\frac{3}{8}\pi$ . |               |
| (c) $\frac{7}{12}\pi$ . | (f) $2014\pi$ .         | (h) $-2014$ . |

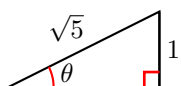
3. Find the indicated circle arc-length. The answer key has not been proofread, use with caution.

- (a) Circle of radius 3, arc of measure  $36^\circ$ .
- (b) Circle of radius  $\frac{1}{2}$ , arc of measure  $100^\circ$ .
- (c) Circle of radius 1, arc of measure 3 (radians).
- (d) Circle of radius 3, arc of measure  $300^\circ$ .

4. Find the 6 trigonometric functions of the indicated angle in the indicated right triangle.

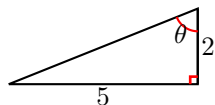


(a)

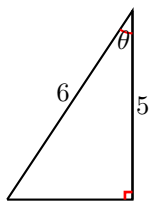


(b)

(c)



(d)



5. Find the exact value of the trigonometric function (using radicals).

(a)  $\cos 135^\circ$ .

(b)  $\sin 225^\circ$ .

(c)  $\cos 495^\circ$ .

(d)  $\sin 560^\circ$ .

(e)  $\sin\left(\frac{3\pi}{2}\right)$ .

(f)  $\cos\left(\frac{11\pi}{6}\right)$ .

(g)  $\sin\left(\frac{2015\pi}{3}\right)$ .

(h)  $\cos\left(\frac{17\pi}{3}\right)$ .

6. Find all solutions of the equation in the interval  $[0, 2\pi)$ . The answer key has not been proofread, use with caution.

(a)  $\sin x = -\frac{\sqrt{2}}{2}$ .

(b)  $\cos x = \frac{\sqrt{3}}{2}$ .

(c)  $\sin(3x) = \frac{1}{2}$ .

(d)  $\cos(7x) = 0$ .

(e)  $\cos\left(3x + \frac{\pi}{2}\right) = 0$ .

(f)  $\sin\left(5x - \frac{\pi}{3}\right) = 0$ .