# Section 2.3

Finding Trig Values Using a Calculator

## SINE, COSINE, AND TANGENT

1. Compute the following trigonometric function values:

(i) $\sin(52°)$

0.788

(ii) $\cos(187.48°)$

−0.991

(iii) $\tan(-2000°)$

−0.364

2. Compute the following trigonometric function values of degrees in DMS. You can either convert DMS to DD using a calculator, or input DMS directly if your calculator supports it.

(i) $\sin(187°44')$

(ii) $\cos(-225°32'11'')$

$-255°32'11'' = -255.536°$

$\Rightarrow \cos(-255°32'11'') = -0.250$

(iii) $\tan(1500°22'38.95'')$

$1500°22'38.95'' \sim 0.377$

$\Rightarrow \tan(1500°22'38.95'') \sim 1.759$

## THE OTHER TRIGONOMETRIC FUNCTIONS

3. Most calculators only have sin, cos, and tan. Use the *reciprocal identities* to calculate trigonometric function values for the other guys.

(i) $\sec(52°)$

$= \frac{1}{\cos(52°)} \sim 1.624$

(ii) $\cot(187°)$

$= \frac{1}{\tan(187°)} \sim 8.144$

(iii) $\csc(-225°32'11'')$

$\sim \frac{1}{\sin(-255.536°)} \sim 1.033$

(iv) $\cot(1500°22'38.95'')$

$= \frac{1}{\tan(1500°22'38.95'')} \sim 0.569$

## INVERSE TRIGONOMETRIC FUNCTIONS

4. For the following, find an approximate value for $\theta$ where the trigonometric function yields the given value.

(i) $\cos\theta = 0.87$

$\Rightarrow \theta = \cos^{-1}(0.87)$

$\Rightarrow \theta \sim 29.54°$

(ii) $\sin\theta = -0.53$

$\Rightarrow \theta = \sin^{-1}(-0.53)$

$\Rightarrow \theta = -32.005°$

(iii) $\tan\theta = 1.115$

$\Rightarrow \theta = \tan^{-1}(1.115)$

$\Rightarrow \theta = 48.112°$

5. Like before, most calculators only have the inverse trigonometric functions for sin, cos, and tan. Use the *reciprocal identities* to calculate the inverse for the other trigonometric functions. Again, find an approximate value for $\theta$ where the trigonometric function yields the given value.

(i) $\sec\theta = 2.54$

$\Rightarrow \cos\theta = \frac{1}{2.54} \sim 0.3937$

$\Rightarrow \theta = \cos^{-1}(0.3937) \Rightarrow \theta \sim 66.815^\circ$

(ii) $\csc\theta = -2.6$

$\Rightarrow \sin\theta = \frac{-1}{2.6} \sim -0.3846$

$\Rightarrow \theta = \sin^{-1}(-0.3846) \Rightarrow \theta \sim -22.62^\circ$

(iii) $\cot\theta = 12.5$

$\Rightarrow \tan\theta = \frac{1}{12.5} = 0.08$

$\Rightarrow \theta = \tan^{-1}(0.08)$

$\Rightarrow \theta \sim 4.574^\circ$