

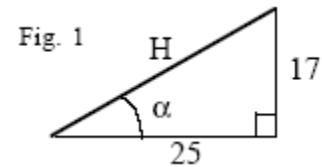
Directions: Work in groups of 2-3 people. You may need extra paper.

1 Each equation has an infinite number of solutions...find one of them. Don't solve it graphically on your calculator...do it algebraically and give an exact answer involving an inverse trig function.

(a) $\sin(x) = 0.3$

(b) $3 \cos(2x - 1) = 1.5$

2 What is α in fig. 1? Give both an exact answer and an approximate decimal (in radians, of course).



3 If a plane is 3 miles directly above a point on the ground that is 7 miles horizontally away from you, at what angle will you have to look up from the horizontal in order to see it?

4 An ant rides on a bike tire of radius 1 foot that is centered at the origin in the xy plane. The angle $\theta(t)$ of the ant (in standard position) after t seconds is given by $\theta(t) = \pi t$.

(a) What is the y -coordinate of the ant after t seconds?

(b) Find one time at which the ant will have y -coordinate equal to -0.4 .

5 Evaluate the expression exactly *without* using your calculator.

(a) $\sin^{-1}\left(-\frac{1}{\sqrt{2}}\right) =$

(b) $\tan^{-1}\left(-\frac{1}{\sqrt{3}}\right) =$

(c) $\arctan(-1) =$

(d) $\cos^{-1}(0) =$

(e) $\arcsin\left(\frac{\sqrt{36-x^2}}{6}\right) = \arccos(\quad)$

(Fill the blank with an algebraic expression.)

(f) $\sin(\arcsin(-0.1)) =$

(g) $\sin^{-1}(\sin(7\pi/4)) =$

(h) $\tan(\arcsin(-\frac{3}{4})) =$