

## Review for Test 6

Find five different values for  $x$  in the equations below.

1.  $4\cos^2 x = 3$

2.  $\sin x = \tan x$

3.  $2\sin^2 x - 1 = 0$

4.  $\tan^2 x - 1 = 0$

5. Use your unit circle to find each of the following values.

a.  $\sec 240^\circ$

b.  $\cot \frac{\pi}{4}$

c.  $\csc 315^\circ$

d.  $\csc \frac{2\pi}{3}$

e.  $\sec 120^\circ$

f.  $\cot 2\pi$

## Word Problems

6. In predator-prey situations, the number of animals in each category tends to vary periodically. A certain region has hawks as predators and rabbits as prey. The number of hawks varies with time according to the function  $H = 400 + 300 \sin 0.6(t - 1)$ , and the number of rabbits varies according to the function  $R = 1200 + 500 \sin 0.6 t$ , with time  $t$  in years. How many hawks and rabbits will there be in the region in 12 years? (*You need to be in radian mode for this equation.*)
  
7. Drew is flying from Columbus, Ohio to Columbus, Georgia, a distance of 530 miles. He starts his flight  $10^\circ$  off course and flies on this course for 140 miles. How far is he from Columbus, Georgia?
  
8. A corner of a park occupies a triangular area that faces two streets that meet at an angle measuring  $73^\circ$ . The sides of the area facing the streets are each 85 feet in length. The park's landscaper wants to plant bulbs around the edges of the triangular area. Find the perimeter of the triangular area.
  
9. A hot air balloon rises at the rate of 63 feet per minute. An observer stands 400 feet away from the place of ascent. From the observer's point of view, what is the angle of elevation of the balloon after 8 minutes?

**Review**

**Solve for  $x$  in the following equations.**

10.  $\log_{2401} 343 = x$

11.  $5^{9x} = 259$

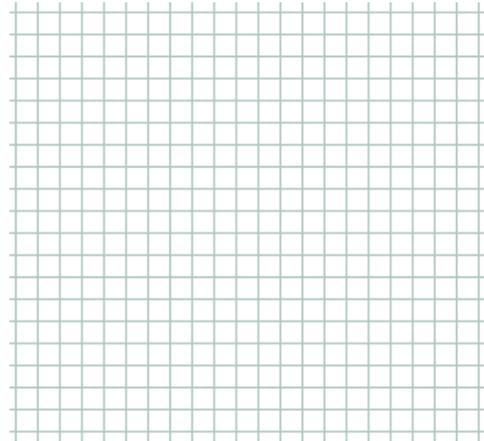
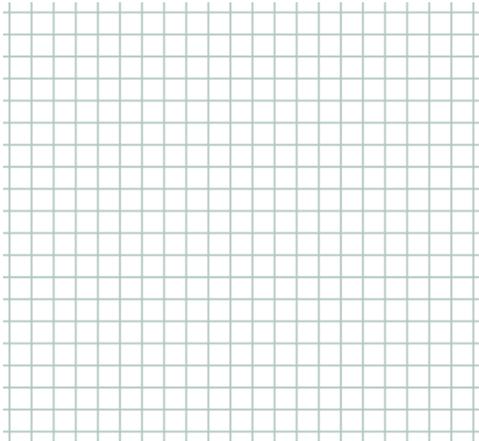
12.  $\frac{x-8}{x-7} + \frac{x-5}{x-6} = \frac{2x+3}{x+2}$

13.  $\sqrt{2x-3} = 18$

**Graph each function and its parent function on the same set of axes.**

14.  $y = -x^2 + 5$

15.  $y = |x - 3| + 2$



16. Find the amplitude, period, and phase shift of the equation  $y = 2 \sin (3x - 180^\circ)$ , then graph:

Amplitude:

Period:

Phase Shift:

