

Review- Circles, Trig, Rational Expressions and Equations and Quadratics

Circles

1. Leslie is eating some of her 12-inch birthday cake. The cake has been sliced into 16 equal pieces.
 - a. If Leslie eats 3 pieces, what area of the cake has she consumed?
 - b. What is the length of the empty pie pan space for the 3 pieces Leslie ate?
 - c. What is the area of the pie that still remains?

Trigonometry

2. Find $\sin \frac{3\pi}{4}$.
3. Find $\sec \frac{8\pi}{3}$.
4. Find $\tan \frac{\pi}{3} + \csc \frac{5\pi}{4}$.
5. Ally is on the Ferris Wheel at the county fair with her boyfriend Alex. The base of the Ferris Wheel is 43 feet above the ground and the diameter is 18 feet. It takes 90 seconds to make one revolution around.
 - a. Draw a graph of Ally and Alex's motion around the Ferris Wheel.
 - b. Write an equation to represent this motion with x representing time IN MINUTES and y representing distance above the ground in feet.
 - c. How high above the ground are Alex and Ally after 2 minutes on the Ferris Wheel?

Rational Expressions and Equations

6. Simplify. $\frac{2x^2-7x-15}{3x^2-16x+5}$
7. Simplify. $\frac{x-2}{x-4} - \frac{3}{x^2-x-12}$
8. Simplify. $\frac{x^2+x-12}{2x^2-x-1} \div \frac{x^2+x-12}{x^2+3x-4}$
9. Solve. $\frac{x-2}{x^2+3x-18} - \frac{4}{x-3} = \frac{3}{x+6}$
10. A tour bus for a rock band is taking a 120-mile trip to a tour stop and returning again the following night. If the return trip takes twice as long and the bus travels 20 miles per hour less, how fast was the bus traveling on the return trip?

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Quadratics

11. The standard form of a quadratic equation is $y = 4x^2 - 16x + 12$. Give the factored and vertex form and then sketch a graph showing the vertex and zeros.

12. Solve $3(x - 3)^2 - 9 = 0$ using square roots.

13. Solve $2x^2 - 6x + 15 = 0$ using completing the square.