

- Solve the following equations.
 - $e^{x-1} = 2^{2x+3}$
 - $e^{2\ln(x-1)} = 2x + 1$
- You are investing some money in an account. How long does it take for your money to double in size if the account pays 12% annual interest compounded:
 - annually
 - quarterly
 - daily
 - continuously
- Radioactive materials decay according to the exponential function: $A = A_0 e^{kt}$; where A_0 is the initial amount of radioactive, A is amount of radioactive left after t years, and k is some constant number. Some radioactive substance decays to one-third of its original amount in 10 days. What is the half-life of this radioactive substance. (ans.: 6.3 days)
- Solve the following expression for y . $x = \frac{1}{2}(e^y + e^{-y})$
- If $\theta = 245^\circ$, show which quadrant its terminal side falls in. Show a general form for all the coterminal angles to θ . Find two positive and two negative coterminal angles as θ . What is θ in radians?
- Find arc length on a circle of radius 3 that subtends a central angle whose measure is 245° . Find area of the circular sector corresponding to this angle.
- A bicycle wheel whose radius is 5 in. rotates at a rate of 40 rpm (revolution per minute). Find its angular speed in radians per minute. Find its linear speed in inches per minute.
- Find the six trig. functions for the angle θ in the following right triangle in terms of a and b (only).
- Verify the following identities by transforming the left side to the right side.
 - $\frac{\sec \theta + \csc \theta}{\sec \theta - \csc \theta} = \frac{\sin \theta + \cos \theta}{\sin \theta - \cos \theta}$
 - $(\tan \theta + \cot \theta) \tan \theta = \sec^2 \theta$
 - $\cos^4(x) + \sin^4(x) = 1 - 2 \sin^2 x \cos^2 x$
 - $\frac{\sin x + \cos x}{\sin x - \cos x} = \frac{1 + 2 \sin x \cos x}{2 \sin^2 x - 1}$
- Find exact values of the six trigonometric functions of an angle in standard position whose terminal side is in the fourth quadrant and is parallel to the line $y = -\frac{2}{3}x + 1$.
- Show **which quadrant** do the terminal sides of the following angles fall in. Find the **reference angle** of each. Find the **sin, cos, and tan** of each angle. Find one positive and one negative **coterminal angle** for each. (Use the same unit as the original given angle)
 - -960°
 - $72\pi/12$
 - $7\pi/6$
 - $-7\pi/3$
- Given: $\sin \alpha$ is positive, and $\cos \alpha = -3/5$. Find exact values of all trig. functions of α .
- Find the exact values of the remaining parts (length of all sides and size of all angles) of the triangle ABC with $\gamma = 90^\circ$ with given parts. $a = 4\sqrt{3}$, $c = 8$
- Rewrite the following expression in non-radical form without using absolute values for the indicated values of α . $\sqrt{1 - \sin^2 \alpha}$ $\frac{\pi}{2} < \alpha < \pi$
- Graph each of the following trigonometric functions. In each case show five landmarks, find the amplitude, phase shift and the period.
 - $y = 2 \cos\left(2x - \frac{\pi}{3}\right)$
 - $y = -2 \sin\left(3x + \frac{\pi}{4}\right) + 2$
 - $y = 3 \tan\left(2\pi x - \frac{\pi}{3}\right)$
 - $y = -2 \cot\left(x + \frac{\pi}{4}\right)$

