WeBWorK Assignment Homework09 is due: 05/21/2016 at 04:10pm EDT.

Reference: Axler, Precalculus, 2nd ed, Sections 5.1, 5.2, and 5.3

Here’s the list of functions and symbols that WeBWorK understands.

1. (1 pt) Find the exact value of each expression if defined; otherwise, input undefined.
   (a) $\sin^{-1} \frac{1}{2} =$ degrees.
   (b) $\cos^{-1} \frac{1}{2} =$ degrees.
   (c) $\cos^{-1} \frac{1}{6} =$ degrees.

2. (1 pt) Evaluate the following expressions. Your answer must be in radians.
   (a) $\tan^{-1} \left( -\frac{\sqrt{3}}{3} \right) =$
   (b) $\tan^{-1} (-1) =$
   (c) $\tan^{-1} (0) =$

3. (1 pt) Find the exact value of each expression if defined; otherwise, input undefined.
   (a) $\tan^{-1} \frac{\sqrt{3}}{3} =$ degrees.
   (b) $\tan^{-1} \left( -\frac{\sqrt{3}}{3} \right) =$ degrees.
   (c) $\sin^{-1} (-6) =$ degrees.

4. (1 pt) Evaluate the following expressions. Your answer must be an angle in radians and in the interval $[-\pi/2, \pi/2]$. Note that $\pi$ is already provided in the answer so you just have to write the appropriate multiple. E.g. if the answer is $\pi/2$ you should write 1/2. Do not use decimal numbers. The answer should be a fraction or an integer.
   (a) $\tan^{-1} (\tan(-5\pi/6)) = \pi$
   (b) $\tan^{-1} (\tan(3\pi/4)) = \pi$
   (c) $\tan^{-1} (\tan(7\pi/6)) = \pi$

5. (1 pt) Solve the equation in the interval $[0, 2\pi]$. If there is more than one solution write them separated by commas.
   $$(\sin(x))^2 = \frac{1}{2}$$

6. (1 pt) Solve the equation in the interval $[0, 2\pi]$. If there is more than one solution write them separated by commas.
   Hint: To solve this problem you will have to use the quadratic formula, inverse trigonometric functions and the symmetry of the unit circle.
   $$(\tan(x))^2 - 0.3\tan(x) - 7 = 0$$

7. (1 pt) Evaluate the following expressions.
   $\cos(\sin^{-1} \left( \frac{\sqrt{3}}{2} \right))$
   $\tan(\sin^{-1} (0))$

8. (1 pt) Find the exact value of each expression if defined; otherwise, input undefined.
   (a) $\tan(\sin^{-1} \frac{1}{2}) =$
   (b) $\tan(\sin^{-1} (-\frac{1}{2})) =$

9. (1 pt) Find the exact value of each expression by sketching a triangle:
   (a) $\sin(\cos^{-1} \frac{3}{5}) =$
   (b) $\cos(\sin^{-1} \frac{1}{5}) =$

10. (1 pt) Find the exact value of each expression by sketching a triangle:
    (a) $\cos(\tan^{-1} 2) =$
    (b) $\tan(\cos^{-1} \frac{1}{\sqrt{5}}) =$

11. (1 pt) Rewrite the expression as an algebraic expression in $x$:
    $\tan^{-1}(x) =$

12. (1 pt) Simplify by referring to the appropriate triangle or trigonometric identity.
    $\cot(\sin^{-1}(x)) =$

13. (1 pt) A triangle has sides of lengths 9 and 4 and unknown included angle $\theta$. If the area of the triangle is 3.6, find the angle $\theta$. Give your answer in radians. If there is more than one possible answer, give them as a comma separated list.
    $\theta =$ radians

14. (1 pt)

   An isosceles triangle has slant height $s$ and angle $t$ opposite the base.

   Find a formula for the base length $b$ in terms of the angle $t$ and the slant height $s$.
   $b =$

   Find a formula for the enclosed area $A$ in terms of $t$ and $s$.
   $A =$
15. (1 pt)
A regular pentagon (5 sided polygon) is inscribed in a circle of radius 4 centimeters.

Find the area it encloses.
Area = \[ \text{square centimeters} \]

Find its perimeter.
Perimeter = \[ \text{centimeters} \]

16. (1 pt)
An isosceles triangle has height \( h \) and angle \( t \) opposite the base.

Find a formula for the base length \( b \) in terms of the angle \( t \) and the height \( h \).
\[ b = \text{ } \]

Find a formula for the enclosed area \( A \) in terms of \( t \) and \( h \).
\[ A = \text{ } \]

17. (1 pt)
A regular septagon (7 sided polygon) is circumscribed about a circle of radius 7 centimeters.

Find the area it encloses.
Area = \[ \text{square centimeters} \]

Find its perimeter.
Perimeter = \[ \text{centimeters} \]