WeBWorK Assignment Homework12 is due : 05/21/2016 at 04:13pm EDT.

Reference: Axler, Precalculus, 2nd ed, Sections 6.3 and 6.4

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

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1. (1 pt) Find the angle in radians between the vectors $\vec{v} = \langle 2,4 \rangle$ and $\vec{w} = \langle -5,1 \rangle$.

Angle = _____ radians

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2. (1 pt)

A triangle is defined by the three points:

$A = (9,8)$

$B = (6,6)$

$C = (7,10)$.

Determine all three angles in the triangle (in radians).

θ_a = _____

θ_b = _____

θ_c = _____

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3. (1 pt) With $\vec{v} = \langle -2,-1 \rangle$ and $\vec{w} = \langle -2,-3 \rangle$, calculate:

$7\vec{v} - 3\vec{w} =$ _____

$\vec{v} \cdot \vec{w} =$ _____

$\|\vec{v}\| =$ _____

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4. (1 pt) Find a scalar t such that $t\langle -2,2 \rangle + \langle 3,1 \rangle$ is perpendicular to $\langle 4,5 \rangle$.

$t =$ _____

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5. (1 pt) A river flows west to east at a speed of 12 ft/s. A man in a rowboat rows due north (relative to the water) at a speed of 6 ft/s. Find the speed and direction of the boat relative to the fixed riverbed.

Speed = _____ ft/s

Direction: _____ degrees east of due north

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6. (1 pt) Evaluate the expression $(-5-i)-(-8+7i)$ and write the result in the form $a+bi$.

The difference is _____.

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7. (1 pt) Evaluate the expression $(-7+5i)(-6-3i)$ and write the result in the form $a+bi$.

The product is _____.

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8. (1 pt) Find the following quotient and express the answer in standard form of a complex number.

$$\frac{7-5i}{4-3i}$$

Answer: _____

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9. (1 pt) Evaluate the expression

$$\frac{7+8i}{-3-i}$$

and write the result in the form $a+bi$.

The quotient is _____.

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10. (1 pt) Find all solutions of the equation $x^2+2x+7=0$ and express them in the form $a+bi$:

solutions: _____

(Note: If there is more than one solution, enter a comma separated list (i.e.: 1+2i,3+4i).)

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11. (1 pt) Solve the following equations for z:

(a) $iz = 4 - zi$

$z =$ _____ + _____ i,

(b) $\dfrac{z}{1-z} = 1 - 5i$

$z =$ _____ + _____ i,

(c) $(2-i)z + 8z^2 = 0$

(This question has two solutions, one of which is 0, find the other)

$z =$ _____ +_____ i.

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12. (1 pt) Calculate:

(a) $\left|\dfrac{2+i}{-1-i}\right| =$ _____,

(b) $\left|\overline{(1+i)}(3-3i)(4-4i)\right| =$ _____,

(c) $\left|\dfrac{i(3+3i)^3}{(3-4i)^2}\right| =$ _____,

(d) $\left|\dfrac{(\pi+i)^{100}}{(\pi-i)^{100}}\right| =$ _____.