



- A pole 60 feet tall is situated at the bottom of a hill that slopes up at an angle of 20.0° . A guy wire from the top of the pole to the hillside forms an angle of 32° with the top of the pole. Find the distance, d , from the base of the pole to the guy wire's point of attachment.
- Use the given measures to solve triangle ABC : $a = 13$, $b = 10$, $c = 11$.
- Find the area of the triangle in problem number 2.
- A plane travels 160 miles at a heading of $N 33^\circ W$. It then changes direction and travels 205 miles at a heading of $N 49^\circ W$. How far is the plane from its original position?
- Given the vector $\vec{u} = \vec{AB}$ with $A(4, 0)$ and $B(7, 4)$, find $\|\vec{u}\|$ and the angle, θ , that the vector makes with the direction of the positive x -axis.
- Given $\vec{a} = 2\vec{i} + 3\vec{j}$ and $\vec{b} = -6\vec{i} + 4\vec{j}$, find
 - $\vec{a} + \vec{b}$
 - $2\vec{a} - 5\vec{b}$
 - Draw $\vec{a} - \vec{b}$
 - The angle between \vec{a} and \vec{b} .
- Find the decomposition of \mathbf{u} into the sum of two orthogonal vectors, one of which is $\text{proj}_{\mathbf{v}}\mathbf{u}$ where, $\mathbf{u} = \langle 5, 3 \rangle$ and $\mathbf{v} = \langle 6, 1 \rangle$.
- A force of 65 pounds is applied at an angle of 25° above the horizontal to push a cart across the floor. Find the work done if the cart is moved 50 feet.
- Find the standard form of the complex number $9(\cos 193^\circ + i \sin 193^\circ)$.
- Find the trigonometric form of the complex number $z = -5 + 12i$
- Given: $z = 4\left(\cos \frac{\pi}{3} + i \sin \frac{\pi}{3}\right)$, and $w = 10\left(\cos \frac{\pi}{2} + i \sin \frac{\pi}{2}\right)$, find:
 - zw
 - $\frac{w}{z}$
 - z^5
 - $\sqrt[3]{w}$
 - The angle between w and z .
- A triangle has sides of length 6, 7, and 8. Use Heron's formula to find the area of the triangle.
- Three forces act on an object. The first force is 20 newtons directly down. The second force is 50 newtons at an elevation of 45° above the positive x -axis. The third force is 30 newtons at an angle 15° above the negative x -axis. Find the net (resultant) force on the object.