[1]   A car travels along an east-west road road. A house sits off the side of the road.

Originally, the house is on a bearing of $216°$ from the car.

After the car has travelled 96 feet, the house is then on a bearing of $162°$ from the car.
Find the original and final distance between the car and the house.

[2]   A 24 foot tall flagpole is mounted vertically (to the Earth) along a sloped road.

When the angle of elevation of the sun is $72°$, the flagpole's shadow is 9 feet long downhill.
Find the angle of inclination of the road.

[3]   A mass of 35 kg is suspended motionless in mid air by two forces with direction angles $30°$ and $135°$ respectively.
Find the magnitudes of the forces.

[4]   A warehouse worker is pulling a pallet across the floor using a strap.
        The strap is 4 meters long and the worker's hand is 1 meter above the ground.
        Find the work done if the worker exerts a force of 42 newtons along the strap and pulls the pallet 12 meters.

[5]   A 24 foot flagpole is mounted vertically (to the Earth) along a sloped road which has an angle of inclination of $6°$.
        A cat sits on the road, 9 feet uphill from the base of the flagpole.
        Find the angle of depression from the top of the flagpole to the cat.

[6]   You wish to reach a point 132 miles on a bearing of $192°$ from home.
        Due to weather conditions, you instead travel 126 miles on a bearing of $168°$.
        How far, and on what bearing, must you now travel to reach your destination ?