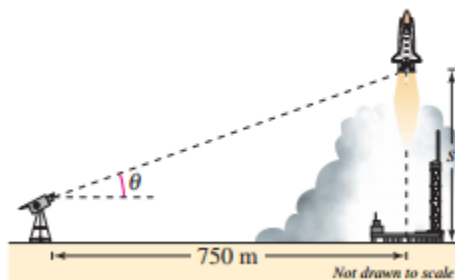


- 1) A ladder is leaning against the side of a house so that the distance on the ground between the base of the ladder and the house is 7 feet. If the length of the ladder is 15 feet, then what is the angle at which the ladder is leaning?
- 2) A pilot needs to begin his descent when his plane is 7.5 km above the ground. The straight line distance from the plane directly to the airport is 200 km. What measure should the angle of descent be so the plane reaches the airport?

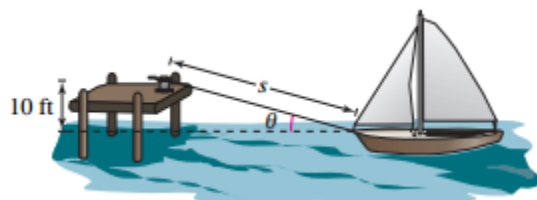
This is #83 on Pg 329

- 3) A television camera at ground level is filming the lift-off of a space shuttle at a point 750 meters from the launch pad (see figure). Let Θ be the angle of elevation to the shuttle and let s be the height of the shuttle. Write Θ as a function of s . Find Θ when $s = 400$ meters and when $s = 1600$ meters.



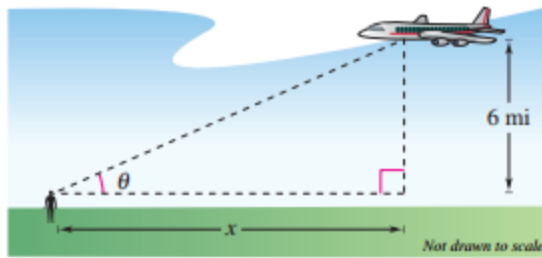
This is #81 on Pg 329

- 4) A boat is pulled in by means of winch located on a dock 10 feet above the deck of the boat (see figure). Let Θ be the angle of elevation from the boat to the winch and let s be the length of the rope from the winch to the boat. Write Θ as a function of s . Find Θ when $s = 52$ and when $s = 26$ feet.



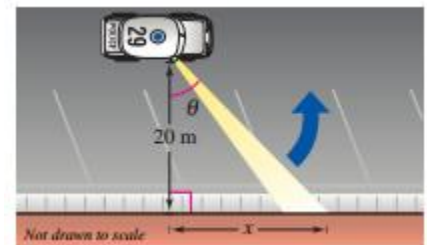
This is #85 on Pg 330

- 5) An airplane flies at an altitude of 6 miles toward a point directly over an observer. Consider θ and x as shown in figure. Write θ as a function of s . Find θ when $x = 10$ miles and $x = 3$ miles.



This is #86 on Pg 330

- 6) A security car with its spotlight on is parked 20 meters from a warehouse. Consider θ and x as shown in figure. Write θ as a function of s . Find θ when $x = 5$ meters and $x = 12$ meters.



This is #25 on Pg 338

- 7) An engineer erects a 75-foot vertical cellular-phone tower. Find the angle of elevation to the top of the tower from a point on level ground 95 feet from its base.
- 8) A 10 foot pole casts a 30 foot shadow. What is the angle of inclination of the sun?
- 9) A man walks in a northeasterly direction for 30 miles, and he ends up 5 miles east of his starting point. In what direction was he walking? Answer as a compass heading.
- 10) A crane has a 200-foot arm whose lower end is 5 feet off the ground. The arm has to reach the top of the dome 80 feet high. At what angle X should the arm be set?

