Math 375, Spring 2026, Applications of Trig Functions

1) A right triangle has a 42° angle. The shortest side of the triangle is 17.4 cm. Find the lengths of the other two sides.

2) A right triangle has a 23° angle. The hypotenuse of the triangle is 827 cm. Find the lengths of the other two sides.

3) A right triangle has one leg that is 34.6 inches and its hypotenuse is 62.4 inches. Find the other side and the angles.

4) A regular pentagon is inscribed in a circle of radius 3.00 meters. Find the length of each side of the pentagon. Find its area. Find the ratio of the pentagon's area to the circle's area. Find its perimeter. Find the ratio of the pentagon's perimeter to the circle's circumference.

5) A road sign says "6% grade." What is the angle of elevation of the road?

6) The slope of a line is 2. What is the angle of elevation of the line?

7) You walk 12 miles heading N 30° E. Then you turn right 40° and walk 8 more miles. How far are you from your starting point? What is your bearing angle from your starting point?

8) You hold out one finger at arm's length. What angle does your finger make as seen from your eye?

9) The moon is approximately 3,475 km in diameter, and its distance to Earth varies from about 348,000 km to 399,000 km. When the moon is closest to Earth, what angle does the moon make as seen from Earth? When the moon is farthest from Earth, what angle does the moon make as seen from Earth?

10) Can you block the moon (from one eye) with one finger held at arm's length?

11) The sun is approximately 1,392,000 km in diameter, and approximately 150,000,000 km from Earth. What angle does the sun make as seen from Earth? When the moon is farthest from Earth, can it block the sun? When the moon is closest to Earth, can it block the sun?

12) Frodo and Sam are walking towards Mt. Doom. At one point, the top of the mountain is 3.16° above the horizon. They walk 11 more miles, and now the top is 4.28° above the horizon. How tall is Mt. Doom?