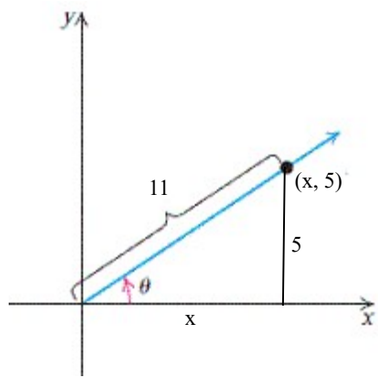
Student: Cole Lamers **Date:** 07/11/19	**Instructor:** Kelly Galarneau **Course:** CA&T Internet (70263) Galarneau	**Assignment:** 5.6 Inverse Trigonometric Functions

Use a sketch to find the exact value of y.

$$y = \cos\left(\sin^{-1}\frac{5}{11}\right)$$

Let $\theta = \sin^{-1}\frac{5}{11}$. Since θ is in the range of the inverse sine function, $-\frac{\pi}{2} \le \theta \le \frac{\pi}{2}$. Furthermore, since the sine of θ is positive, θ must occur in quadrant I.

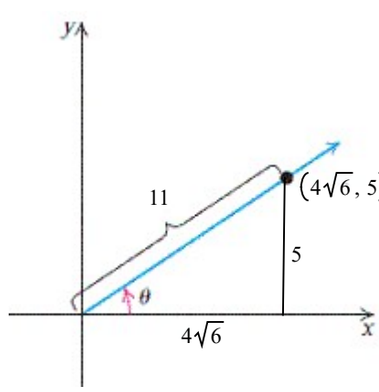
By definition, $\sin\theta = \frac{5}{11}$. For any point (x, y) on the terminal side of θ, $\sin\theta = \frac{y}{r}$, where r is the distance from the origin to (x, y). Thus, using the point (x, 5) on the terminal side of θ in quadrant I, draw a right triangle with hypotenuse equal to 11 and the side opposite θ equal to 5. A sketch of the angle θ is shown to the right.



Using the Pythagorean theorem, solve for the unknown side, x.

$$x = \sqrt{11^2 - 5^2}$$
$$= 4\sqrt{6}$$

Therefore, the terminal side of θ contains the point $\left(4\sqrt{6}, 5\right)$.



Determine $\cos\theta$.

$$\cos\theta = \frac{x}{r} = \frac{4\sqrt{6}}{11}$$

Therefore, $y = \frac{4\sqrt{6}}{11}$.