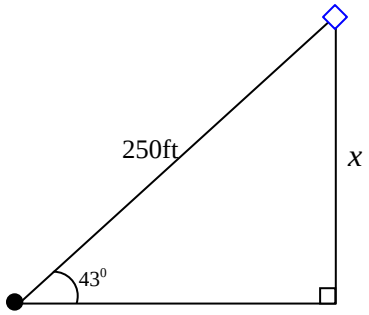
RIGHT TRIANGLE TRIGONOMETRY

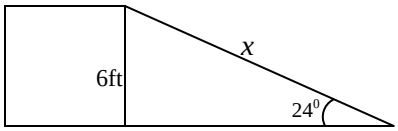
Exercises (page-12):

1. Let x be the height of the kite. The figure below shows the situation.



Since $\sin(\theta) = \dfrac{\text{opposite side}}{\text{hypotenuse}}$, we have: $\sin(43^0) = \dfrac{x}{250}$. That is, $x = 250(\sin(43^0)) \approx 170.5$.
Hence, the height of the kite is approximately 170.5 ft.

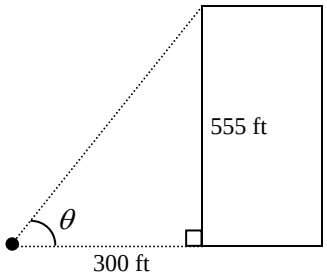
2. Let's draw a figure first to illustrate the problem. Let x be the length of the ramp.



$$\sin(\theta) = \frac{\text{opposite side}}{\text{hypotenuse}} \quad \Rightarrow \quad \sin(24^0) = \frac{6}{x} \quad \Rightarrow \quad x = \frac{6}{\sin(24^0)} \approx 14.8.$$

Thus, the ramp is approximately 14.8 ft long.

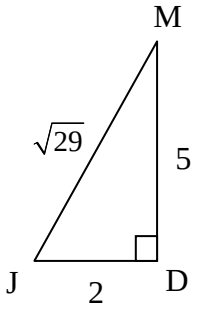
3. The figure below illustrates the situation. Let θ be the angle we're looking for.



We know that $\tan(\theta) = \dfrac{\text{opposite side}}{\text{adjacent side}}$. Then, $\tan(\theta) = \dfrac{555}{300} = 1.85$.

Hence, $\theta \approx 61.6^0$.

Exercises (page-15):



1. $\sin(J)=\frac{5}{\sqrt{29}}$

2. $\cos(J)=\frac{2}{\sqrt{29}}$

3. $\tan(J)=\frac{5}{2}$

4. $\sin(M)=\frac{2}{\sqrt{29}}$

5. $\cos(M)=\frac{5}{\sqrt{29}}$

6. $\tan(M)=\frac{2}{5}$

7. $\csc(J)=\frac{1}{\sin(J)}=\frac{1}{5/\sqrt{29}}=\frac{\sqrt{29}}{5}$

8. $\sec(J)=\frac{1}{\cos(J)}=\frac{1}{2/\sqrt{29}}=\frac{\sqrt{29}}{2}$

9. $\cot(J)=\frac{2}{5}$

10. $\csc(M)=\frac{1}{\sin(M)}=\frac{1}{2/\sqrt{29}}=\frac{\sqrt{29}}{2}$

11. $\sec(M)=\frac{1}{\cos(M)}=\frac{\sqrt{29}}{5}$

12. $\cot(M)=\frac{5}{2}$