

20.2 Triangles We Know And Love, And The Information They Give Us

1. (a) $\frac{1}{2}$ (b) $\frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$ (c) $\frac{\sqrt{3}}{2}$ (d) $-\frac{\sqrt{3}}{2}$ (e) $\frac{1}{2}$
 (f) $\frac{1}{2}$ (g) 1 (h) -1 (i) $-\sqrt{3}$ (j) $\frac{1}{2}$

3. (a) $\frac{\sqrt{3}}{2}$ (b) $-\frac{\sqrt{2}}{2}$ (c) -1 (d) $\frac{2}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$
 (e) $-\sqrt{3}$ (f) $-\frac{2}{\sqrt{3}} = -\frac{2\sqrt{3}}{3}$ (g) $\sin \pi = 0$ (h) $= \cos \frac{7\pi}{4} = \frac{\sqrt{2}}{2}$

4. (a) $x = \frac{\pi}{6}$ (b) $x = \frac{\pi}{6}, \frac{5\pi}{6}$ (c) $x = \frac{\pi}{3}$ (d) $2x = \frac{\pi}{3}, \frac{5\pi}{3}, \frac{7\pi}{3}, \frac{11\pi}{3} \Rightarrow x = \frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}$

8. By symmetry the extra length on the end of top is 0.5

Then $\tan(30^\circ) = \frac{0.5}{x} \Rightarrow x = \frac{\sqrt{3}}{2}$ sq ft.

Area = (average of bases)(height) = $\left(\frac{2.5+1.5}{2}\right)\frac{\sqrt{3}}{2} = \sqrt{3}$

