Radians 5A

1 a $\frac{\pi}{20} \times \frac{180}{\pi} = 9°$

b $\frac{\pi}{15} \times \frac{180}{\pi} = 12°$

c $\frac{5\pi}{12} \times \frac{180}{\pi} = 75°$

d $\frac{5\pi}{4} \times \frac{180}{\pi} = 225°$

e $\frac{3\pi}{2} \times \frac{180}{\pi} = 270°$

f $3\pi \times \frac{180}{\pi} = 540°$

2 a $0.46 \times \frac{180}{\pi} = 26.4°$

b $1 \times \frac{180}{\pi} = 57.3°$

c $1.135 \times \frac{180}{\pi} = 65.0°$

d $\sqrt{3} \times \frac{180}{\pi} = 99.2°$

3 a $\sin(0.5\,\text{rad}) = 0.479$

b $\cos(\sqrt{2}\,\text{rad}) = 0.156$

c $\tan(1.05\,\text{rad}) = 1.74$

d $\sin(2\,\text{rad}) = 0.909$

e $\sin(3.6\,\text{rad}) = -0.443$

4 a $8 \times \frac{\pi}{180} = \frac{2\pi}{45}$

b $10 \times \frac{\pi}{180} = \frac{\pi}{18}$

c $22.5 \times \frac{\pi}{180} = \frac{\pi}{8}$

d $30 \times \frac{\pi}{180} = \frac{\pi}{6}$

e $112.5 \times \frac{\pi}{180} = \frac{5\pi}{8}$

f $240 \times \frac{\pi}{180} = \frac{4\pi}{3}$

g $270 \times \frac{\pi}{180} = \frac{3\pi}{2}$

h $315 \times \frac{\pi}{180} = \frac{7\pi}{4}$

i $330 \times \frac{\pi}{180} = \frac{11\pi}{6}$

5 a $50 \times \frac{\pi}{180} = 0.873\,\text{rad}$

b $75 \times \frac{\pi}{180} = 1.31\,\text{rad}$

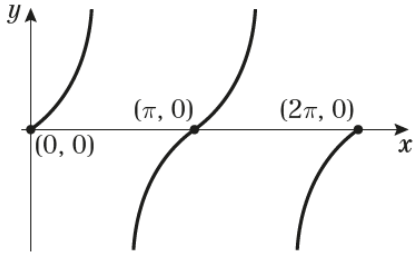
c $100 \times \frac{\pi}{180} = 1.75\,\text{rad}$

d $160 \times \frac{\pi}{180} = 2.79\,\text{rad}$

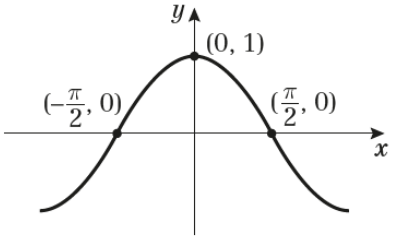
e $230 \times \frac{\pi}{180} = 4.01\,\text{rad}$

f $320 \times \frac{\pi}{180} = 5.59\,\text{rad}$

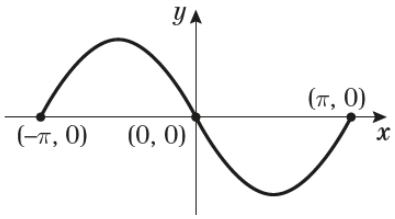
6 a



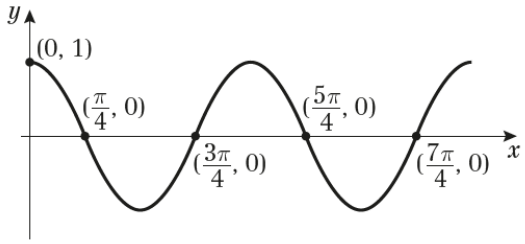
6 b



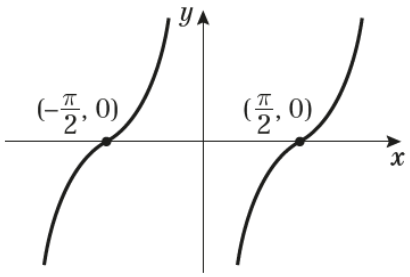
7 a



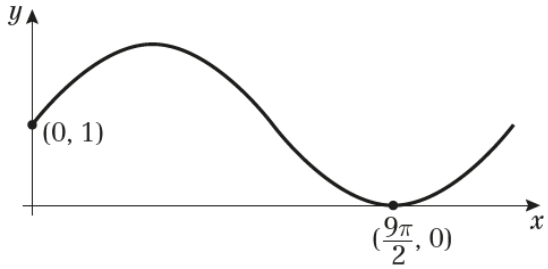
b



c



d



8 $(0, -0.5)$

$\left(-\frac{11\pi}{6}, 0\right), \left(-\frac{5\pi}{6}, 0\right), \left(\frac{\pi}{6}, 0\right), \left(\frac{7\pi}{6}, 0\right)$

Challenge

a $\cos\theta = 1$

$\theta = 0, 2\pi, 4\pi, 6\pi, \ldots$

$\theta = 2n\pi,\ n \in \mathbb{Z}$

b $\sin\theta = -1$

$\theta = \frac{3\pi}{2}, \frac{7\pi}{2}, \frac{11\pi}{2}, \ldots$

$\theta = \frac{3\pi}{2} + 2n\pi,\ n \in \mathbb{Z}$

c $\tan\theta$ undefined

$\theta = \frac{\pi}{2}, \frac{3\pi}{2}, \ldots$

$\theta = \frac{\pi}{2} + n\pi,\ n \in \mathbb{Z}$