19.4 Angles and Arc Lengths

1.(a) (i) $60^\circ = 60^\circ \frac{\pi}{180^\circ} = \frac{\pi}{3}$ (ii) $\frac{\pi}{6}$ (iii) $\frac{\pi}{4}$ (iv) $-\frac{2\pi}{3}$

5. circumference $= 2\pi(4)in$, distance $= (8\pi \frac{in}{rev})(50 \frac{rev}{\min})(2min) = 800\pi\ in.$

8. distance $= (2.2)(2\pi)(13) = (57.2)\pi \approx 179.7\ in.$

10. $P(\alpha) = (2,3)$, $P(-\alpha) = (2,-3)$ *and* $P(\pi+\alpha) = (-2,-3)$

(a) $\frac{3}{\sqrt{13}}$ (b) $\frac{2}{\sqrt{13}}$ (c) $\frac{3}{2}$ (d) $\frac{-3}{\sqrt{13}}$

(e) $\frac{-2}{\sqrt{13}}$ (f) $\frac{3}{\sqrt{13}}$ (g) $\frac{-3}{2}$