

CM300 - Introdução ao Cálculo
Lista de Exercícios 8

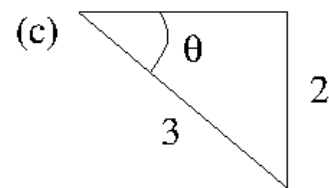
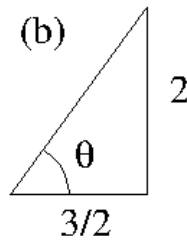
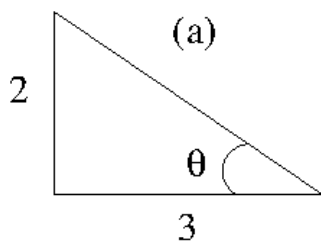
1. Converta de graus para radianos:

- (a) 30° (b) 10° (c) 135° (d) 270° (e) 15° (f) 700°

2. Converta de radianos para graus:

- (a) $\frac{5\pi}{3}$ (b) $\frac{\pi}{2}$ (c) 3π (d) $\frac{\pi}{36}$ (e) 10π (f) $\frac{3\pi}{2}$

3. Calcule $\sin(\theta)$, $\cos(\theta)$ e $\tan(\theta)$ para os ângulos indicados nos triângulos abaixo:



4. Marque os ângulos a seguir no círculo trigonométrico, identificando para cada ângulo o ponto (a, b) que, junto com o ponto $(1, 0)$, o identifica. Em seguida, obtenha $\cos(\theta)$ e $\sin(\theta)$.

- (a) $\theta = 270^\circ$ (b) $\theta = 225^\circ$ (c) $\theta = -45^\circ$

5. Usando as identidades trigonométricas e/ou a redução ao primeiro quadrante, encontre $\sin(\theta)$, $\cos(\theta)$ e $\tan(\theta)$.

- (a) $\theta = 135^\circ$ (b) $\theta = 540^\circ$ (c) $\theta = 315^\circ$ (d) $\theta = -270^\circ$

Respostas:

1. (a) $\frac{\pi}{6}$ (b) $\frac{\pi}{18}$ (c) $\frac{3\pi}{4}$ (d) $\frac{3\pi}{2}$ (e) $\frac{\pi}{12}$ (f) $\frac{70\pi}{18}$

2. (a) 300° (b) 90° (c) 540° (d) 5° (e) 1800° (f) 270°

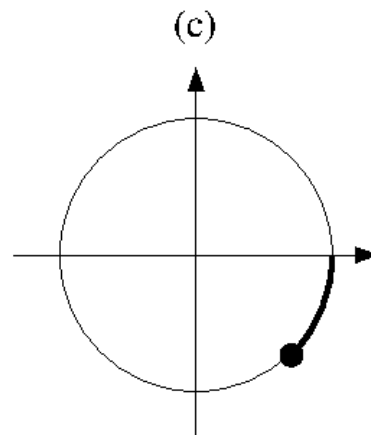
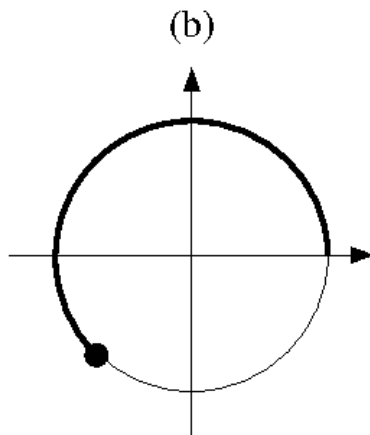
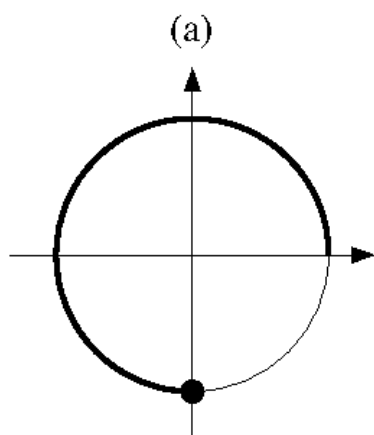
3. (a) $\sin(\theta) = \frac{2}{\sqrt{13}}$, $\cos(\theta) = \frac{3}{\sqrt{13}}$, $\tan(\theta) = \frac{2}{3}$ (b) $\sin(\theta) = \frac{4}{5}$, $\cos(\theta) = \frac{3}{5}$, $\tan(\theta) = \frac{4}{3}$

(c) $\sin(\theta) = \frac{2}{3}$, $\cos(\theta) = \frac{\sqrt{5}}{3}$, $\tan(\theta) = \frac{2}{\sqrt{5}}$

4. (a) $(a, b) = (0, -1)$, $\cos(\theta) = 0$ e $\sin(\theta) = -1$ (note que $\theta = 90^\circ + 90^\circ + 90^\circ$)

(b) $(a, b) = \left(-\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}\right)$, $\cos(\theta) = -\frac{\sqrt{2}}{2}$ e $\sin(\theta) = -\frac{\sqrt{2}}{2}$ (note que $\theta = 90^\circ + 90^\circ + 45^\circ$)

(c) $(a, b) = \left(\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}\right)$, $\cos(\theta) = \frac{\sqrt{2}}{2}$ e $\sin(\theta) = -\frac{\sqrt{2}}{2}$



5. (a) $\sin(\theta) = -\frac{\sqrt{2}}{2}$, $\cos(\theta) = -\frac{\sqrt{2}}{2}$, $\tan(\theta) = 1$

(b) $\sin(\theta) = 0$, $\cos(\theta) = -1$, $\tan(\theta) = 0$

(c) $\sin(\theta) = -\frac{\sqrt{2}}{2}$, $\cos(\theta) = \frac{\sqrt{2}}{2}$, $\tan(\theta) = -1$

(d) $\sin(\theta) = \frac{\sqrt{3}}{2}$, $\cos(\theta) = -\frac{1}{2}$, $\tan(\theta) = -\sqrt{3}$

(e) $\sin(\theta) = 1$, $\cos(\theta) = 0$, $\tan(\theta)$ não existe.