Exercise Set 3: Trigonometry (No Calculator)

1

What is the greatest possible value of f if $f(x)=\frac{8\sin 2x}{2}-\frac{1}{2}$?

2

If $\cos\left(\frac{\pi}{3}\right)=a$, what is the value of $\left(\frac{a}{3}\right)^2$?

3

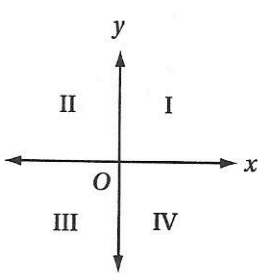
If $(\sin x - \cos x)^2 = 0.83$, what is the value of $(\sin x + \cos x)^2$?

4

Which of the following is equivalent to $\frac{\sin\left(\frac{\pi}{6}\right)}{\cos\left(\frac{\pi}{3}\right)}$?

A) $\frac{1}{\sqrt{6}}$ B) $\frac{1}{\sqrt{3}}$ C) $\frac{\sqrt{3}}{\sqrt{2}}$ D) 1

5



If $\sin\theta < 0$ and $\sin\theta\cos\theta < 0$, then θ must be in which quadrant of the figure above?

A) I B) II C) III D) IV

6

If $\sin x=\frac{a}{b}$ and $0<x<\frac{\pi}{2}$, which of the following expressions is equal to $\frac{b}{a}$?

A) $\sin\left(\frac{1}{x}\right)$

B) $\frac{1}{\cos\left(\frac{\pi}{2}-x\right)}$

C) $1-\sin^2 x$

D) $\sin\left(\frac{\pi}{2}-x\right)$

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If $\sin b = a$, which of the following could be the value of $\cos(b+\pi)$?

A) $\sqrt{a^2-1}$

B) a^2-1

C) $-\sqrt{1-a^2}$

D) $1-a^2$

8

If $0<x<\frac{\pi}{2}$ and $\frac{\cos x}{1-\sin^2 x}=\frac{3}{2}$, what is the value of $\cos x$?

A) $\frac{1}{9}$

B) $\frac{1}{3}$

C) $\frac{4}{9}$

D) $\frac{2}{3}$