Circular Functions Test 3A

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Name: _____

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Navigator | Assessment | Student | 30 min

Question: 1

If $\sec(x)=3$ and $\frac{3\pi}{2}\le x\le 2\pi$, then $\sin(x)$ is equal to:

a) $\frac{-\sqrt{3}}{2}$ b) $\frac{\sqrt{3}}{2}$ c) $\frac{1}{3}$ d) $\frac{-2\sqrt{2}}{3}$ e) $\frac{2\sqrt{2}}{3}$

Question: 2

If $\cot(\alpha)=1+\frac{1}{x}$ and $0\le\alpha\le\frac{\pi}{2}$, then $\cos^2(\alpha)$ is equal to:

a) $\frac{x^2+2x+1}{2x^2+2x+1}$ b) $\frac{x^2}{2x^2+2x+1}$ c) $\frac{x}{\sqrt{2x^2+2x+1}}$ d) $\frac{x+1}{\sqrt{2x^2+2x+1}}$ e) $\frac{1}{x^2}$

Question: 3

If $\sin(\alpha)=\frac{3}{5}$ and $0\le\alpha\le\frac{\pi}{2}$, then $\sin(2\alpha)$ is equal to:

a) $\frac{6}{5}$ b) $\frac{3}{10}$ c) $\frac{12}{25}$ d) $\frac{24}{25}$ e) $\frac{7}{25}$

Question: 4

If $\sin(\alpha)=\frac{3}{5}$ and $\cos(\beta)=\frac{12}{13}$ where $\alpha\in\left[0,\frac{\pi}{2}\right)$ and $\beta\in\left[0,\frac{\pi}{2}\right)$ then $\cos(\alpha-\beta)$ is equal to:

a) $\frac{-8}{65}$ b) $\frac{16}{65}$ c) $\frac{33}{65}$ d) $\frac{63}{65}$ e) $\frac{62}{65}$

Question: 5

If $\sec(\alpha)=x$ and $\alpha\in\left(0,\frac{\pi}{2}\right)$ and $\sec(\beta)=x$ where $\beta\in\left(\frac{3\pi}{2},\frac{5\pi}{2}\right)$ then β in terms of α is:

a) $2\pi+\alpha$ b) $2\pi-\alpha$ c) $2\pi\pm\alpha$ d) $\pi+\alpha$ e) $\pi\pm\alpha$

Question: 6

Given $y>x>0$ then $\tan\left(\sin^{-1}\left(\frac{x}{y}\right)\right)$ is equal to:

a) $\frac{y}{\sqrt{x^2-y^2}}$ b) $\frac{x}{\sqrt{y^2-x^2}}$ c) $\frac{x}{y-x}$ d) $\frac{\sqrt{y^2-x^2}}{x}$ e) $\frac{\sqrt{y^2-x^2}}{y}$

Question: 7

Given $0 \le x \le 1$ then $\sin\left(\sin^{-1}(x)+\sin^{-1}\left(\sqrt{1-x^2}\right)\right)$ is equal to:

a) $\frac{\pi}{2}$ b) π c) 0 d) –1 e) 1

Question: 8

The graph of $y=\tan^{-1}\left(\frac{x}{2}\right)$ has asymptotes at:

a) $y=-2$ and $y=2$

b) $x=-2$ and $x=2$

c) $y=-\frac{\pi}{2}$ and $y=\frac{\pi}{2}$

d) $x=-\frac{\pi}{2}$ and $x=\frac{\pi}{2}$

e) $y=-\pi$ and $y=\pi$

Question: 9

Given the function defined by the rule: $f(x)=a+b\sin^{-1}(cx)$ where *a*, *b* and *c* are real, non-zero constants, then the maximal domain of $f(x)$ is:

a) $[-c,c]$

b) $\left[-\frac{a}{b},\frac{a}{b}\right]$

c) $\left[\frac{c(a-1)}{b},\frac{c(1-a)}{b}\right]$

d) $\left[-\frac{1}{c},\frac{1}{c}\right]$

e) $\left[-\frac{\pi}{2c},\frac{\pi}{2c}\right]$

Question: 10

Given the function defined by the rule: $f(x)=a+b\tan^{-1}(c(x-d))$ where *a*, *b*, *c* and *d* are real positive constants, then the range of $f(x)$ is:

a) $[a-b,a+b]$

b) $(-\infty,\infty)$

c) $[a-b\pi,a+b\pi]$

d) $\left(a-\frac{b\pi}{c},a+\frac{b\pi}{c}\right)$

e) $\left(a-\frac{b\pi}{2},a+\frac{b\pi}{2}\right)$