King Abdul Aziz University Faculty of Sciences Mathematics Department
Math 110 Second Test Fall 2012 (30 Marks) Time 90 m
Student Name: Student Number: [A]

1) If $\frac{x^2-9}{x-3} \le f(x) \le x+3$, then $\lim_{x\to 0} f(x) =$

[A] does not exist [B] -3 [C] 0 [D] 3

2) The domain of the function $f(x) = \frac{1}{2-e^x}$ is

[A] $(2,\infty)$ [B] $\mathbb{R} = (-\infty,\infty)$

[C] $(-2,\infty)$ [D] $\mathbb{R}\setminus\{\ln 2\}$

3) $\lim_{x\to 0} \frac{\sin\left(\frac{3x}{2}\right)}{\tan\left(\frac{5x}{7}\right)} =$

[A] $\frac{15}{14}$ [B] $\frac{21}{10}$ [C] $\frac{10}{21}$ [D] $\frac{14}{15}$

4) The inverse of the function $f = \{(0,3),(-2,-1),(3,4),(5,-2),(1,7)\}$ is

[A] $f^{-1} = \{(0,3),(-1,-2),(4,3),(-2,5),(7,1)\}$

[B] $f^{-1} = \{(3,0),(-1,-2),(4,3),(-2,5),(7,1)\}$

[C] $f^{-1} = \{(0,3),(-2,-1),(4,3),(-2,5),(7,1)\}$

[D] $f^{-1} = \{(-2,-1),(3,4),(5,-2),(1,7),(0,3)\}$

5) Find the inverse of the function $f(x) = \frac{3x+1}{2x-5}$.

[A] $\frac{2x-5}{3x+1}$ [B] $\frac{5x+1}{2x-3}$ [C] $\frac{5x+1}{2x+3}$ [D] $\frac{5x-1}{2x-3}$

6) $\lim_{x\to 4} \frac{x^2-16}{x^2-4} =$

[A] 0 [B] 1 [C] $\frac{1}{8}$ [D] 8

7) $\lim_{x\to\infty} \frac{\sqrt{5x^2-8}+1}{x+7} =$

[A] 0 [B] $\sqrt{5}$ [C] $-\sqrt{5}$ [D] ∞

8) $\cos(2x) =$

[A] $1+2\sin^2 x$ [B] $1-2\sin^2 x$ [C] $-1-2\sin^2 x$ [D] $-1+2\sin^2 x$

9) If $2^{x^2+5x+9}=8$, then $x=$

[A] -3 or -2 [B] -6 or -1 [C] 6 or 1 [D] 2 or 3

10) $\lim_{x\to 4}\frac{x^2-3x-4}{x-4}=$

[A] -5 [B] 8 [C] 5 [D] does not exist

11) The number k that makes $f(x)=\begin{cases} k^2x^2+3x+1 & ;x\le 1 \\ 5kx-2 & ;x>1 \end{cases}$ continuous at 1 is

[A] -3 or -2 [B] -6 or -1 [C] 6 or 1 [D] 2 or 3

12) $\lim_{x\to -2}(x^3-2x+1)=$

[A] -3 [B] 3 [C] -11 [D] 13

13) $\cos^{-1}(\frac{\sqrt{3}}{2})=$

[A] $\frac{\pi}{2}$ rad [B] $\frac{\pi}{4}$ rad [C] $\frac{\pi}{3}$ rad [D] $\frac{\pi}{6}$ rad

14) $\lim_{x\to 0}\frac{x^3+3x^2}{x^2}=$

[A] 3 [B] -7 [C] -3 [D] 7

15) If $\sin(x)=\frac{1}{7}$, and $0<x<\frac{\pi}{2}$, then $\cos(x)=$

[A] $\frac{1}{4\sqrt{3}}$ [B] $4\sqrt{3}$ [C] $\frac{4\sqrt{3}}{7}$ [D] $\frac{7}{4\sqrt{3}}$

16) $\lim_{x\to 0}\frac{\sqrt{x+9}-3}{x}=$

[A] 0 [B] 1 [C] $\frac{1}{6}$ [D] 6

17) If $f(x)=\cos x$, then $D_f=$

[A] $(-\infty,1]$ [B] $(-\infty,-1)$ [C] $[-1,1]$ [D] $\mathbb{R}=(-\infty,\infty)$

18) If $f(x)=\begin{cases} 2x+3 & ;x\ge -2 \\ 2x+5 & ;x<-2 \end{cases}$, then $\lim_{x\to -2}f(x)=$

[A] 3 [B] does not exist [C] 1 [D] -1

19) $\frac{11\pi}{6}$ rad $=$

[A] 210^0 [B] 240^0 [C] 300^0 [D] 330^0

20) $300^0 =$

[A] $\frac{4\pi}{3}$ rad [B] $\frac{5\pi}{3}$ rad [C] $\frac{7\pi}{6}$ rad [D] $\frac{11\pi}{6}$ rad

21) The function $f(x) = \frac{x+1}{2-\ln x}$ is continuous on

[A] $\mathbb{R}$ [B] $\mathbb{R} \setminus \{\ln 2\}$ [C] $\mathbb{R} \setminus \{2\}$ [D] $\mathbb{R} \setminus \{e^2\}$

22) The vertical asymptote of $f(x) = \frac{3-x}{x^2-5x-6}$ is

[A] $y = -1,6$ [B] $x = -1,6$ [C] $x = -6,1$ [D] $y = -6,1$

23) $\lim_{x \to 9^+} \frac{|x-9|}{x-9} =$

[A] does not exist [B] 1 [C] 0 [D] -1

24) $\lim_{x \to 3} \frac{x^3-27}{x-3} =$

[A] does not exist [B] $\frac{1}{18}$ [C] $\frac{1}{27}$ [D] 27

25) $\lim_{x \to \frac{\pi}{3}} (\sin x - \cos x) =$

[A] $\frac{-\sqrt{3}-1}{2}$ [B] $\frac{\sqrt{3}-1}{2}$ [C] $\frac{\sqrt{3}+1}{2}$ [D] $\frac{1-\sqrt{3}}{2}$

26) Find the range of the function $f(x) = 3^x$.

[A] $(0,\infty)$ [B] $\mathbb{R} = (-\infty,\infty)$ [C] $(-\infty,0)$ [D] $[-1,1]$

27) $\lim_{x \to \infty} \frac{3x^2-5x+9}{6x^2+3x+2} =$

[A] $\frac{1}{6}$ [B] $\frac{1}{2}$ [C] ∞ [D] 0

28) Find the domain of the function $f(x) = \sin^{-1}(2x-5)$.

[A] $[2,3]$ [B] $(2,3)$ [C] $[-2,3]$ [D] $[-1,1]$

29) $\log_2 64 + \log_2 32 + 3\log_2 2 =$

[A] 4 [B] 14 [C] 8 [D] -2

30) $\sec\left(\frac{5\pi}{6}\right) =$

[A] $-\frac{2}{\sqrt{3}}$ [B] $-\frac{\sqrt{3}}{2}$ [C] $-\frac{1}{\sqrt{3}}$ [D] $-\sqrt{3}$

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1) $\frac{5\pi}{3}$ rad =

[A] 210^0 [B] 240^0 [C] 300^0 [D] 330^0

2) 210^0 =

[A] $\frac{4\pi}{3}$rad [B] $\frac{5\pi}{3}$rad [C] $\frac{7\pi}{6}$rad [D] $\frac{11\pi}{6}$rad

3) $\lim_{x\to 3}\frac{x-3}{x^3-27}=$

[A] 27 [B] $\frac{1}{18}$ [C] $\frac{1}{27}$ [D] does not exist

4) $\sin^{-1}\left(\frac{\sqrt{3}}{2}\right)=$

[A] $\frac{\pi}{3}$rad [B] $\frac{\pi}{6}$rad [C] $\frac{\pi}{2}$rad [D] $\frac{\pi}{4}$rad

5) If $\sin(x)=\frac{1}{7}$, and $0<x<\frac{\pi}{2}$, then $\cot(x)=$

[A] $\frac{1}{4\sqrt{3}}$ [B] $4\sqrt{3}$ [C] $\frac{4\sqrt{3}}{7}$ [D] $\frac{7}{4\sqrt{3}}$

6) $\log_2 64+\log_2 32-3\log_2 2=$

[A] 4 [B] 14 [C] 8 [D] -2

7) The vertical asymptote of $f(x)=\frac{3-x}{x^2+5x-6}$ is

[A] $y=-1,6$ [B] $x=-1,6$ [C] $x=-6,1$ [D] $y=-6,1$

8) $\lim_{x\to 0}\frac{\sqrt{x+25}-5}{x}=$

[A] $\frac{1}{10}$ [B] 1 [C] 0 [D] 10

9) If $f(x)=\begin{cases}2x+3 & ;x\geq -2\\ 2x+5 & ;x<-2\end{cases}$, then $\lim_{x\to -2^+} f(x)=$

[A] 3 [B] does not exist [C] 1 [D] -1

10) $\lim_{x\to -2}(x^3-2x+1)=$

[A] 3 [B] -3 [C] -11 [D] 13

11) $\lim_{x\to\infty}\dfrac{\sqrt{2x^2-8}+1}{x+7}=$

[A] $\sqrt{2}$ [B] 0 [C] $-\sqrt{2}$ [D] ∞

12) If $\dfrac{x^2+9}{x-3}\le f(x)\le x-3$, then $\lim_{x\to 0} f(x)=$

[A] does not exist [B] -3 [C] 0 [D] 3

13) $\tan\left(\dfrac{5\pi}{6}\right)=$

[A] $-\dfrac{2}{\sqrt{3}}$ [B] $-\dfrac{\sqrt{3}}{2}$ [C] $-\dfrac{1}{\sqrt{3}}$ [D] $-\sqrt{3}$

14) $\lim_{x\to 4}\dfrac{x^2-3x-4}{x-4}=$

[A] 5 [B] 8 [C] -5 [D] does not exist

15) $\lim_{x\to\frac{\pi}{3}}(\sin x+\cos x)=$

[A] $\dfrac{-\sqrt{3}-1}{2}$ [B] $\dfrac{\sqrt{3}-1}{2}$ [C] $\dfrac{\sqrt{3}+1}{2}$ [D] $\dfrac{1-\sqrt{3}}{2}$

16) The domain of the function $f(x)=\dfrac{1}{3-e^x}$ is

[A] $\mathbb{R}\setminus\{\ln 3\}$ [B] $\mathbb{R}=(-\infty,\infty)$ [C] $(-3,\infty)$ [D] $(3,\infty)$

17) The inverse of the function $f=\{(0,3),(-2,1),(3,4),(5,-2),(7,1)\}$ is

[A] $f^{-1}=\{(3,0),(1,-2),(4,3),(-2,5),(1,7)\}$

[B] $f^{-1}=\{(0,3),(1,-2),(4,3),(-2,5),(7,1)\}$

[C] $f^{-1}=\{(0,3),(-2,1),(4,3),(-2,5),(1,7)\}$

[D] $f^{-1}=\{(-2,1),(3,4),(5,-2),(1,7),(0,3)\}$

18) $\lim_{x\to\infty}\dfrac{5x^2-5x+9}{10x^2+3x+2}=$

[A] $\dfrac{1}{2}$ [B] $\dfrac{1}{10}$ [C] ∞ [D] 0

19) $\lim_{x\to 4}\dfrac{x-4}{x^2-16}=$

[A] 8 [B] 1 [C] $\dfrac{1}{8}$ [D] 0

20) $\cos(2x)=$

[A] $1+2\cos^2 x$ [B] $1-2\cos^2 x$ [C] $-1-2\cos^2 x$ [D] $-1+2\cos^2 x$

21) $\lim_{x\to 0}\dfrac{x^3-7x^2}{x^2}=$

[A] 3 [B] -7 [C] -3 [D] 7

22) Find the domain of the function $f(x)=\sin^{-1}(2x-11)$.

[A] $(5,6)$ [B] $[5,6]$ [C] $[-5,6]$ [D] $[-1,1]$

23) The function $f(x)=\dfrac{x+1}{3-\ln x}$ is continuous on

[A] $\mathbb{R}\setminus\{e^3\}$ [B] $\mathbb{R}\setminus\{\ln 3\}$ [C] $\mathbb{R}\setminus\{3\}$ [D] $\mathbb{R}$

24) If $2^{x^2-7x+9}=8$, then $x=$

[A] -3 or -2 [B] -6 or -1 [C] 6 or 1 [D] 2 or 3

25) $\lim_{x\to 7^-}\dfrac{|x-7|}{x-7}=$

[A] does not exist [B] 0 [C] 1 [D] -1

26) Find the inverse of the function $f(x)=\dfrac{3x+4}{7x-5}$.

[A] $\dfrac{7x-5}{3x+4}$ [B] $\dfrac{5x-4}{7x-3}$ [C] $\dfrac{5x+4}{7x-3}$ [D] $\dfrac{5x-4}{7x+3}$

27) $\lim_{x\to 0}\dfrac{\sin\left(\frac{5x}{7}\right)}{\tan\left(\frac{3x}{2}\right)}=$

[A] $\dfrac{15}{14}$ [B] $\dfrac{21}{10}$ [C] $\dfrac{10}{21}$ [D] $\dfrac{14}{15}$

28) If $f(x)=\sin x$, then $R_f=$

[A] $[-1,1]$ [B] $(0,1)$ [C] $\mathbb{R}=(-\infty,\infty)$ [D] $(-1,0]$

29) Find the domain of the function $f(x)=7^x$.

[A] $(0,\infty)$ [B] $\mathbb{R}=(-\infty,\infty)$ [C] $(-\infty,0)$ [D] $[-1,1]$

30) The number k that makes $f(x)=\begin{cases}k^2x^2+3x+1 & :x\le 1\\ -7kx-2 & ;x>1\end{cases}$ continuous at 1 is

[A] -3 or -2 [B] -6 or -1 [C] 6 or 1 [D] 2 or 3

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1) The function $f(x)=\dfrac{x+1}{5-\ln x}$ is continuous on

[A] $\mathbb{R}\setminus\{\ln 5\}$ [B] $\mathbb{R}\setminus\{e^5\}$ [C] $\mathbb{R}\setminus\{5\}$ [D] $\mathbb{R}$

2) If $f(x)=\sin x$, then D_f =

[A] $(-\infty,1]$ [B] $(-\infty,-1)$ [C] $\mathbb{R}=(-\infty,\infty)$ [D] $[-1,1]$

3) If $\sin(x)=\dfrac{1}{7}$, and $0<x<\dfrac{\pi}{2}$, then $\sec(x)=$

[A] $\dfrac{1}{4\sqrt{3}}$ [B] $4\sqrt{3}$ [C] $\dfrac{4\sqrt{3}}{7}$ [D] $\dfrac{7}{4\sqrt{3}}$

4) $\lim\limits_{x\to\infty}\dfrac{\sqrt{7x^2-8}+1}{x+1}=$

[A] $-\sqrt{7}$ [B] 0 [C] $\sqrt{7}$ [D] ∞

5) The domain of the function $f(x)=\dfrac{1}{7-e^x}$ is

[A] $\mathbb{R}=(-\infty,\infty)$ [B] $\mathbb{R}\setminus\{\ln 7\}$ [C] $(-7,\infty)$ [D] $(7,\infty)$

6) $\lim\limits_{x\to 4}\dfrac{x^2-3x-4}{x-4}=$

[A] 8 [B] 5 [C] -5 [D] does not exist

7) Find the range of the function $f(x)=2^x$.

[A] $(-\infty,0)$ [B] $[-1,1]$ [C] $(0,\infty)$ [D] $\mathbb{R}=(-\infty,\infty)$

8) If $f(x)=\begin{cases}2x+3 & ;x\geq -2\\ 2x+5 & ;x<-2\end{cases}$, then $\lim\limits_{x\to -2^-} f(x)=$

[A] 3 [B] does not exist
[C] 1 [D] -1

9) If $\dfrac{x^2-4}{x-2}\leq f(x)\leq x+2$, then $\lim\limits_{x\to 0} f(x)=$

[A] -2 [B] does not exist [C] 2 [D] 0

10) $\cot\left(\dfrac{5\pi}{6}\right)=$

[A] $-\dfrac{2}{\sqrt{3}}$ [B] $-\dfrac{\sqrt{3}}{2}$ [C] $-\dfrac{1}{\sqrt{3}}$ [D] $-\sqrt{3}$

11) $\lim_{x \to -2} (x^3 - 2x + 1) =$

[A] -11 [B] 3 [C] -3 [D] 13

12) Find the domain of the function $f(x) = \cos^{-1}(2x - 9)$.

[A] $(4,5)$ [B] $[-4,5]$ [C] $[4,5]$ [D] $[-1,1]$

13) $\log_2 64 - \log_2 32 - 3\log_2 2 =$

[A] 4 [B] 14 [C] 8 [D] -2

14) Find the inverse of the function $f(x) = \dfrac{2x - 7}{3x - 9}$.

[A] $\dfrac{3x - 9}{2x - 7}$ [B] $\dfrac{9x - 7}{3x - 2}$ [C] $\dfrac{9x + 7}{3x + 2}$ [D] $\dfrac{9x - 7}{3x + 2}$

15) The vertical asymptote of $f(x) = \dfrac{3 - x}{x^2 + x - 6}$ is

[A] $y = -3,2$ [B] $x = -3,2$ [C] $x = -2,3$ [D] $y = -2,3$

16) $\lim_{x \to 0} \dfrac{x^3 - 3x^2}{x^2} =$

[A] 3 [B] -7 [C] -3 [D] 7

17) The number k that makes $f(x) = \begin{cases} k^2x^2 + 3x + 1 & : x \le 1 \\ -5kx - 2 & ; x > 1 \end{cases}$ continuous at 1 is

[A] -3 or -2 [B] -6 or -1 [C] 6 or 1 [D] 2 or 3

18) $\lim_{x \to 7} \dfrac{x - 7}{x^2 - 49} =$

[A] 14 [B] $\dfrac{1}{14}$ [C] 1 [D] 0

19) $\lim_{x \to 2} \dfrac{x - 2}{x^3 - 8} =$

[A] 12 [B] $\dfrac{1}{12}$ [C] $\dfrac{1}{8}$ [D] does not exist

20) The inverse of the function $f = \{(0,3),(-2,1),(3,4),(5,1),(7,1)\}$ is

[A] $f^{-1} = \{(-2,1),(3,4),(5,1),(1,7),(0,3)\}$

[B] $f^{-1} = \{(0,3),(1,-2),(4,3),(1,5),(7,1)\}$

[C] $f^{-1} = \{(0,3),(-2,1),(4,3),(1,5),(1,7)\}$

[D] $f^{-1} = \{(3,0),(1,-2),(4,3),(1,5),(1,7)\}$

21) $\tan^{-1}\left(\frac{1}{\sqrt{3}}\right)=$

[A] $\frac{\pi}{3}$ rad [B] $\frac{\pi}{6}$ rad [C] $\frac{\pi}{2}$ rad [D] $\frac{\pi}{4}$ rad

22) $\lim_{x\to\infty}\frac{2x^2-5x+1}{8x^2+3x-2}=$

[A] 0 [B] $\frac{1}{8}$ [C] ∞ [D] $\frac{1}{4}$

23) If $2^{x^2-5x+9}=8$, then $x=$

[A] -3 or -2 [B] -6 or -1 [C] 6 or 1 [D] 2 or 3

24) $\lim_{x\to 2^+}\frac{|x-2|}{x-2}=$

[A] does not exist [B] 0 [C] 1 [D] -1

25) $\lim_{x\to 0}\frac{x}{\sqrt{x+49}-7}=$

[A] $\frac{1}{14}$ [B] 14 [C] 0 [D] 1

26) $\lim_{x\to\frac{\pi}{3}}(\cos x-\sin x)=$

[A] $\frac{-\sqrt{3}-1}{2}$ [B] $\frac{\sqrt{3}-1}{2}$ [C] $\frac{\sqrt{3}+1}{2}$ [D] $\frac{1-\sqrt{3}}{2}$

27) $-\cos(2x)=$

[A] $-1-2\sin^2 x$ [B] $1-2\sin^2 x$ [C] $-1+2\sin^2 x$ [D] $1+2\sin^2 x$

28) $\lim_{x\to 0}\frac{\sin\left(\frac{2x}{3}\right)}{\tan\left(\frac{5x}{7}\right)}=$

[A] $\frac{15}{14}$ [B] $\frac{21}{10}$ [C] $\frac{10}{21}$ [D] $\frac{14}{15}$

29) $330^0=$

[A] $\frac{4\pi}{3}$ rad [B] $\frac{5\pi}{3}$ rad [C] $\frac{7\pi}{6}$ rad [D] $\frac{11\pi}{6}$ rad

30) $\frac{7\pi}{6}$ rad $=$

[A] 210^0 [B] 240^0 [C] 300^0 [D] 330^0

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1) The vertical asymptote of $f(x)=\dfrac{7-x}{x^2-x-6}$ is

[A] $y=-3,2$ [B] $x=-3,2$
[C] $x=-2,3$ [D] $y=-2,3$

2) $\lim\limits_{x\to 0}\dfrac{\sin\left(\frac{5x}{7}\right)}{\tan\left(\frac{2x}{3}\right)}=$

[A] $\dfrac{15}{14}$ [B] $\dfrac{21}{10}$ [C] $\dfrac{10}{21}$ [D] $\dfrac{14}{15}$

3) If $f(x)=\begin{cases}2x+7 & ;x\geq -2\\ 3x+9 & ;x<-2\end{cases}$, then $\lim\limits_{x\to -2} f(x)=$

[A] 3 [B] does not exist [C] 1 [D] -1

4) The inverse of the function $f=\{(2,3),(-2,1),(3,4),(5,1),(7,1)\}$ is .

[A] $f^{-1}=\{(-2,1),(3,4),(5,1),(1,7),(2,3)\}$
[B] $f^{-1}=\{(2,3),(1,-2),(4,3),(1,5),(7,1)\}$
[C] $f^{-1}=\{(3,2),(1,-2),(4,3),(1,5),(1,7)\}$
[D] $f^{-1}=\{(2,3),(-2,1),(4,3),(1,5),(1,7)\}$

5) $\log_2 64-\log_2 32+3\log_2 2=$

[A] 4 [B] 14 [C] 8 [D] -2

6) $300^0=$

[A] $\dfrac{4\pi}{3}$rad [B] $\dfrac{5\pi}{3}$rad [C] $\dfrac{7\pi}{6}$rad [D] $\dfrac{11\pi}{6}$rad

7) $\dfrac{4\pi}{3}$ rad $=$

[A] 210^0 [B] 240^0 [C] 300^0 [D] 330^0

8) The function $f(x)=\dfrac{x+1}{7-\ln x}$ is continuous on

[A] $\mathbb{R}\setminus\{\ln 7\}$ [B] $\mathbb{R}\setminus\{7\}$ [C] $\mathbb{R}\setminus\{e^7\}$ [D] $\mathbb{R}$

9) $\lim\limits_{x\to\infty}\dfrac{\sqrt{13x^2-8}+6}{x+1}=$

[A] $-\sqrt{13}$ [B] 0 [C] ∞ [D] $\sqrt{13}$

10) $-\cos(2x) =$

[A] $1-2\cos^2 x$ [B] $-1-2\cos^2 x$ [C] $-1+2\cos^2 x$ [D] $1+2\cos^2 x$

11) $\lim_{x\to -2}(x^3-2x+1) =$

[A] -11 [B] 3 [C] 13 [D] -3

12) $\lim_{x\to\infty}\frac{3x^2-8x+15}{9x^2+4x-13} =$

[A] 0 [B] $\frac{1}{9}$ [C] $\frac{1}{3}$ [D] ∞

13) $\lim_{x\to 0}\frac{x^3+7x^2}{x^2} =$

[A] 3 [B] -7 [C] -3 [D] 7

14) The number k that makes $f(x)=\begin{cases} k^2x^2+3x+1 & ;x\le 1 \\ 7kx-2 & ;x>1 \end{cases}$ continuous at 1 is

[A] -3 or -2 [B] -6 or -1 [C] 6 or 1 [D] 2 or 3

15) $\lim_{x\to 4}\frac{x^2-3x-4}{x-4} =$

[A] 8 [B] does not exist [C] -5 [D] 5

16) Find the inverse of the function $f(x)=\frac{7x+2}{3x-9}$.

[A] $\frac{9x+2}{3x-7}$ [B] $\frac{9x-2}{3x+7}$ [C] $\frac{9x-2}{3x-7}$ [D] $\frac{3x-9}{7x+2}$

17) $\lim_{x\to 0}\frac{x}{\sqrt{x+16}-4} =$

[A] $\frac{1}{8}$ [B] 0 [C] 8 [D] 1

18) If $2^{x^2+7x+9}=8$, then $x =$

[A] -3 or -2 [B] -6 or -1 [C] 6 or 1 [D] 2 or 3

19) If $f(x)=\cos x$, then $R_f =$

[A] $(0,1)$ [B] $[-1,1]$ [C] $\mathbb{R}=(-\infty,\infty)$ [D] $(-1,0]$

20) $\lim_{x\to 7}\frac{x^2-49}{x-7} =$

[A] 14 [B] $\frac{1}{14}$ [C] 1 [D] 0

21) Find the domain of the function $f(x)=5^{x}$.

[A] $(-\infty,0)$ [B] $[-1,1]$ [C] $(0,\infty)$ [D] $\mathbb{R}=(-\infty,\infty)$

22) $\sin^{-1}\left(\frac{1}{\sqrt{2}}\right)=$

[A] $\frac{\pi}{3}$ rad [B] $\frac{\pi}{6}$ rad [C] $\frac{\pi}{2}$ rad [D] $\frac{\pi}{4}$ rad

23) $\lim_{x\to\frac{\pi}{3}}(-\cos x-\sin x)=$

[A] $\frac{-\sqrt{3}-1}{2}$ [B] $\frac{\sqrt{3}-1}{2}$ [C] $\frac{\sqrt{3}+1}{2}$ [D] $\frac{1-\sqrt{3}}{2}$

24) Find the domain of the function $f(x)=\sin^{-1}(2x-7)$.

[A] $(3,4)$ [B] $[-3,4]$ [C] $[-1,1]$ [D] $[3,4]$

25) $\lim_{x\to2}\frac{x^{3}-8}{x-2}=$

[A] 12 [B] $\frac{1}{12}$ [C] 8 [D] does not exist

26) If $\sin(x)=\frac{1}{7}$, and $0<x<\frac{\pi}{2}$, then $\tan(x)=$

[A] $\frac{1}{4\sqrt{3}}$ [B] $4\sqrt{3}$ [C] $\frac{4\sqrt{3}}{7}$ [D] $\frac{7}{4\sqrt{3}}$

27) If $\frac{x^{2}+4}{x-2}\le f(x)\le x-2$, then $\lim_{x\to0}f(x)=$

[A] −2 [B] does not exist [C] 2 [D] 0

28) $\cos\left(\frac{5\pi}{6}\right)=$

[A] $-\frac{2}{\sqrt{3}}$ [B] $-\frac{\sqrt{3}}{2}$ [C] $-\frac{1}{\sqrt{3}}$ [D] $-\sqrt{3}$

29) $\lim_{x\to5}\frac{|x-5|}{x-5}=$

[A] does not exist [B] 0 [C] 1 [D] −1

30) The domain of the function $f(x)=\frac{1}{5-e^{x}}$ is

[A] $\mathbb{R}=(-\infty,\infty)$ [B] $(-5,\infty)$ [C] $\mathbb{R}\setminus\{\ln 5\}$ [D] $(5,\infty)$