King Abdul Aziz University — Faculty of Sciences
Mathematics Department — Math 110
Workshop 9 — Section 3.4+3.5
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1) $\lim_{x\to 3^+} \frac{2}{x-3} =$

[a] 0 [b] $-\frac{2}{3}$ [c] $-\infty$ [d] ∞

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

[a] 0 [b] $\frac{2}{3}$ [c] $-\infty$ [d] ∞

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

[a] 0 [b] $\frac{2}{3}$ [c] $-\infty$ [d] ∞

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

[a] 0 [b] $\frac{2}{3}$ [c] $-\infty$ [d] ∞

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

[a] 0 [b] $-\frac{2}{3}$ [c] $-\infty$ [d] ∞

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

[a] 0 [b] $-\frac{2}{3}$ [c] $-\infty$ [d] ∞

7) $\lim_{x\to 2^+} \frac{3x-1}{x-2} =$

[a] 0 [b] $-\infty$ [c] $\frac{1}{2}$ [d] ∞

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

[a] 0 [b] $-\infty$ [c] $\frac{1}{2}$ [d] ∞

9) $\lim_{x\to -2^+} \frac{1-x}{(x+2)^2} =$

[a] 0 [b] $-\infty$ [c] $\frac{1}{2}$ [d] ∞

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

[a] 0 [b] $-\infty$ [c] $\frac{1}{2}$ [d] ∞

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

[a] 0 [b] $-\infty$ [c] $\frac{1}{2}$ [d] ∞

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

[a] 0 [b] $-\infty$ [c] $\frac{1}{2}$ [d] ∞

13) $\lim_{x\to 2^+} \frac{6x-1}{x^2-4} =$

[a] 0 [b] $-\infty$ [c] $\frac{1}{4}$ [d] ∞

14) $\lim_{x\to 2^-} \frac{6x-1}{x^2-4} =$

[a] 0 [b] $-\infty$ [c] $\frac{1}{4}$ [d] ∞

15) $\lim_{x\to -2^+} \frac{6x-1}{x^2-4} =$

[a] 0 [b] $-\infty$ [c] $\frac{1}{4}$ [d] ∞

16) $\lim_{x\to -2^-} \frac{6x-1}{x^2-4} =$

[a] 0 [b] $-\infty$ [c] $\frac{1}{4}$ [d] ∞

17) $\lim_{x\to -2^-} \frac{6x-1}{x^2-x-6} =$

[a] 0 [b] $-\infty$ [c] $-\frac{1}{2}$ [d] ∞

18) $\lim_{x\to -2^+} \dfrac{6x-1}{x^2-x-6} =$

[a] 0 [b] $-\infty$ [c] $-\dfrac{1}{2}$ [d] ∞

19) $\lim_{x\to 3^+} \dfrac{-1}{x^2-x-6} =$

[a] 0 [b] $-\infty$ [c] $\dfrac{1}{2}$ [d] ∞

20) $\lim_{x\to 3^-} \dfrac{-1}{x^2-x-6} =$

[a] 0 [b] $-\infty$ [c] $\dfrac{1}{2}$ [d] ∞

21) $\lim_{x\to (\pi/2)^+} \tan =$

[a] 0 [b] $-\infty$ [c] $\dfrac{\pi}{2}$ [d] ∞

22) $\lim_{x\to (\pi/2)^-} \tan =$

[a] 0 [b] $-\infty$ [c] $\dfrac{\pi}{2}$ [d] ∞

23) The vertical asymptote of $f(x) = \dfrac{1-x}{2x+1}$ is

[a] $y = -\dfrac{1}{2}$ [b] $x = \dfrac{1}{2}$ [c] $x = -\dfrac{1}{2}$ [d] $y = \dfrac{1}{2}$

24) The vertical asymptote of $f(x) = \dfrac{3-x}{x^2-4}$ is

[a] $y = \pm 2$ [b] $x = \pm 2$ [c] $x = -1$ [d] $y = -1$

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

[a] $y = \pm 2$ [b] $x = -3, 2$ [c] $x = -2$ [d] $y = -2, 3$

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

[a] $y = 2, 3$ [b] $x = 2, 3$ [c] $x = -3, -2$ [d] $y = -3, -2$

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

[a] $y = 2, 3$ [b] $x = 2, 3$ [c] $x = -3, -2$ [d] $y = -3, -2$

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

[a] $y=0,3$ [b] $x=0,3$ [c] $x=-3,0$ [d] $y=-3,0$

29) The vertical asymptote of $f(x)=\dfrac{x-7}{x^2-3x}$ is

[a] $y=0,3$ [b] $x=0,3$ [c] $x=-3,0$ [d] $y=-3,0$

30) The vertical asymptotes of $f(x)=\dfrac{2x^2+1}{x^2-9}$ are

[a] $y=\pm 3$ [b] $x=\pm 3$ [c] $x=2$ [d] $y=2$

31) The function $f(x)=\dfrac{x+1}{x^2-9}$ is

[a] continuous at $a=2$ [b] discontinuous at $a=2$

32) The function $f(x)=\dfrac{x+1}{x^2-9}$ is

[a] continuous at $a=\pm 3$ [b] discontinuous at $a=\pm 3$

33) The function $f(x)=\dfrac{x+1}{x^2-9}$ is discontinuous at

[a] 9 [b] $[-3,3]$ [c] $(-\infty,-3)\cup(3,\infty)$ [d] ± 3

34) The function $f(x)=\dfrac{x+1}{x^2-9}$ is continuous on

[a] 9 [b] $[-3,3]$ [c] $\mathbb{R}\setminus\{\pm 3\}$ [d] ± 3

35) The function $f(x)=\begin{cases}\dfrac{\sin 3x}{x} & :x\neq 0\\ 3 & ;x=0\end{cases}$ is

[a] continuous at $a=0$ [b] discontinuous at $a=0$

36) The function $f(x)=\begin{cases}\dfrac{\sin 3x}{x} & :x\neq 0\\ 5 & ;x=0\end{cases}$ is

[a] continuous at $a=0$ [b] discontinuous at $a=0$

37) The function $f(x)=\begin{cases}\dfrac{2x^2-3x+1}{x-1} & :x\neq 1\\ 7 & ;x=1\end{cases}$ is

[a] continuous at $a=1$ [b] discontinuous at $a=1$

38) The function $f(x)=\begin{cases}\dfrac{2x^2-3x+1}{x-1} & :x\neq 1\\ 1 & ;x=1\end{cases}$ is

$\boxed{a}$ continuous at $a=1$ $\boxed{b}$ discontinuous at $a=1$

39) The function $f(x)=\dfrac{x^2-x-2}{x-2}$ is

$\boxed{a}$ continuous at $a=2$ $\boxed{b}$ discontinuous at $a=2$

40) The function $f(x)=\begin{cases}2x+3 & :x>2\\ 3x+1 & ;x\leq 2\end{cases}$ is

$\boxed{a}$ continuous at $a=2$ $\boxed{b}$ discontinuous at $a=2$

41) The function $f(x)=\dfrac{x+3}{\sqrt{x^2-4}}$ is continuous on

$\boxed{a}$ $[-2,2]$ $\boxed{b}$ $(-2,2)$ $\boxed{c}$ $(-\infty,-2)\cup(2,\infty)$ $\boxed{d}$ $(-\infty,-2]\cup[2,\infty)$

42) The function $f(x)=\sqrt{x^2-4}$ is continuous on

$\boxed{a}$ $[-2,2]$ $\boxed{b}$ $(-2,2)$ $\boxed{c}$ $(-\infty,-2)\cup(2,\infty)$ $\boxed{d}$ $(-\infty,-2]\cup[2,\infty)$

43) The function $f(x)=\sqrt{4-x^2}$ is continuous on

$\boxed{a}$ $[-2,2]$ $\boxed{b}$ $(-2,2)$ $\boxed{c}$ $(-\infty,-2)\cup(2,\infty)$ $\boxed{d}$ $(-\infty,-2]\cup[2,\infty)$

44) The function $f(x)=\dfrac{x+3}{\sqrt{4-x^2}}$ is continuous on

$\boxed{a}$ $[-2,2]$ $\boxed{b}$ $(-2,2)$ $\boxed{c}$ $(-\infty,-2)\cup(2,\infty)$ $\boxed{d}$ $(-\infty,-2]\cup[2,\infty)$

45) The function $f(x)=\dfrac{x+1}{x^2-4}$ is continuous on

$\boxed{a}$ $\{\pm 2\}$ $\boxed{b}$ $[-2,2]$ $\boxed{c}$ $\{x\in\mathbb{R}:x\neq\pm 2\}$ $\boxed{d}$ $(-\infty,-2)\cup(2,\infty)$

46) The function of $f(x)=\log_2(x+2)$ is continuous on

$\boxed{a}$ $(-\infty,\infty)$ $\boxed{b}$ $(0,\infty)$ $\boxed{c}$ $(-2,\infty)$ $\boxed{d}$ $(2,\infty)$

47) The function $f(x)=\sqrt{x-1}+\sqrt{x+4}$ is continuous on

$\boxed{a}$ $[1,\infty)$ $\boxed{b}$ $[4,\infty)$ $\boxed{c}$ $[-1,\infty)$ $\boxed{d}$ $[-4,\infty)$

48) The function $f(x)=5^x$ is continuous on

$\boxed{a}$ $(-\infty,0)$ $\boxed{b}$ $[-1,1]$ $\boxed{c}$ $(0,\infty)$ $\boxed{d}$ $\mathbb{R}=(-\infty,\infty)$

49) The function $f(x)=e^x$ is continuous on

$\boxed{a}$ $(-\infty,0)$ $\boxed{b}$ $[-1,1]$ $\boxed{c}$ $(0,\infty)$ $\boxed{d}$ $\mathbb{R}=(-\infty,\infty)$

50) The function $f(x)=\sin^{-1}(3x-5)$ is continuous on

[a] $\left[\frac{4}{3},2\right]$ [b] $\left[-\frac{4}{3},2\right]$ [c] $[-2,2]$ [d] $\left(\frac{4}{3},2\right)$

51) The function $f(x)=\cos^{-1}(3x+5)$ is continuous on

[a] $\left[\frac{4}{3},2\right]$ [b] $\left[-2,-\frac{4}{3}\right]$ [c] $[-2,2]$ [d] $\left(\frac{4}{3},2\right)$

52) The number c that makes $f(x)=\begin{cases} c+x & :x>2 \\ 2x-c & ;x\le 2 \end{cases}$ is continuous at $x=2$ is

[a] -4 [b] -1 [c] 1 [d] 2

53) The number c makes $f(x)=\begin{cases} cx^2-2x+1 & :x\le -1 \\ 3x+2 & ;x>-1 \end{cases}$ is continuous at -1 is

[a] -4 [b] -1 [c] 0 [d] 2

54) The number c that makes $f(x)=\begin{cases} \frac{\sin kx}{x}+2x-1 & :x<0 \\ 3x+4 & ;x\ge 0 \end{cases}$ is continuous at 0 is

[a] 3 [b] -5 [c] 0 [d] 5

55) The value c that makes $f(x)=\begin{cases} cx^2+2x & :x\le 2 \\ x^3-cx & ;x>2 \end{cases}$ is continuous at 2 is

[a] $-\frac{2}{3}$ [b] $\frac{2}{3}$ [c] 0 [d] $\frac{3}{2}$

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

[a] ± 3 [b] $\pm\frac{\sqrt{7}}{3}$ [c] 0 [d] ± 1

57) The number c that makes $f(x)=\begin{cases} x-2 & :x>5 \\ cx-3 & ;x\le 5 \end{cases}$ is continuous at 5 is

[a] $-\frac{6}{5}$ [b] $\frac{5}{6}$ [c] 2 [d] $\frac{6}{5}$

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

[a] -4 [b] -1 [c] 4 [d] -2