King Abdul Aziz University — Faculty of Sciences
Mathematics Department — Math 110
Workshop 7 — Section 3.1+3.2
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1) $\lim_{x \to -2} (x^3 - 2x + 1) =$

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

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

[A] 10 [B] 2 [C] 4 [D] -10

3) $\lim_{x \to 1} (x^2 + 3x - 5)^3 =$

[A] 1 [B] -1 [C] -3 [D] -13

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

[A] -11 [B] 5 [C] 1 [D] -1

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

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

6) $\lim_{x \to 2} \frac{x^3 + 5}{x^2 + 1} =$

[A] does not exist [B] $\frac{9}{5}$ [C] $\frac{11}{5}$ [D] $\frac{13}{5}$

7) $\lim_{x \to 0} \frac{x^2 + 3x + 5}{x^2 - 3} =$

[A] does not exist [B] $-\frac{5}{3}$ [C] $\frac{5}{3}$ [D] 5

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

[A] does not exist [B] $-\frac{2}{3}$ [C] 0 [D] -1

9) $\lim_{x \to -1} \sqrt{x^3 - 10x + 7} =$

[A] does not exist [B] $\sqrt{3}$ [C] 4 [D] $\sqrt{-5}$

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

[A] does not exist [B] $-\frac{8}{27}$

[C] $\frac{8}{3}$ [D] $\frac{8}{27}$

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

[A] does not exist [B] $\frac{3}{10}$ [C] $-\frac{3}{4}$ [D] $-\frac{3}{10}$

12) $\lim_{x \to 4} \frac{x^2 - 3x}{5 + x}$

[A] does not exist [B] $-\frac{4}{9}$ [C] $\frac{4}{9}$ [D] $-\frac{8}{9}$

13) $\lim_{x \to 4} \frac{x^2 - 4x}{5 + x}$

[A] does not exist [B] 0 [C] $\frac{4}{3}$ [D] $-\frac{8}{9}$

14) $\lim_{x \to 4} \frac{3^{-1} - (2x - 5)^{-1}}{4 - x}$

[A] does not exist [B] 0 [C] $\frac{2}{9}$ [D] $-\frac{2}{9}$

15) $\lim_{x \to 0} \frac{x^3 - 5x^2}{x^2} =$

[a] 5 [b] –5 [c] –10 [d] 0

16) $\lim_{x \to 6} \frac{x - 6}{x^2 - 36} =$

[a] 12 [b] $\frac{1}{12}$ [c] $\frac{1}{8}$ [d] 0

17) $\lim_{x \to 6} \frac{x^2 - 36}{x - 6} =$

[a] 12 [b] $\frac{1}{12}$ [c] 8 [d] 0

18) $\lim_{x \to -6} \frac{x + 6}{x^2 - 36} =$

[a] –12 [b] $-\frac{1}{8}$ [c] $-\frac{1}{12}$ [d] 0

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

[a] 27 [b] $\frac{1}{27}$ [c] 18 [d] does not exist

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

[a] 27 [b] $\frac{1}{27}$ [c] $\frac{1}{18}$ [d] does not exist

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

[a] 12 [b] $\frac{1}{12}$ [c] $\frac{1}{8}$ [d] does not exist

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

[a] 12 [b] $\frac{1}{12}$ [c] 8 [d] does not exist

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

[a] –5 [b] 8 [c] 5 [d] does not exist

24) $\lim_{x\to 3}\frac{x^2+4x-21}{x^2-8x+15}=$

[a] –5 [b] $-\frac{1}{5}$ [c] 5 [d] does not exist

25) $\lim_{x\to 0}\frac{x}{1-(1-x)^2}=$

[a] $-\frac{1}{2}$ [b] $\frac{1}{2}$ [c] 0 [d] does not exist

26) $\lim_{x\to 2}\frac{\sqrt[3]{x+6}-2}{x-2}=$

[a] $\frac{1}{12}$ [b] 12 [c] 0 [d] does not exist

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

[a] – 10 [b] $-\frac{1}{10}$ [c] 10 [d] $\frac{1}{10}$

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

[a] – 10 [b] $-\frac{1}{10}$ [c] 10 [d] $\frac{1}{10}$

29) $\lim_{x\to 2}\frac{x-2}{2-\sqrt{6-x}}=$

[a] does not exist [b] 0 [c] $\frac{1}{4}$ [d] 4

30) $\lim_{x\to 2}\frac{2-\sqrt{6-x}}{x+2}=$

[a] does not exist [b] 0 [c] $\frac{1}{4}$ [d] 4

31) $\lim_{x\to 3}\frac{1-\sqrt{x-2}}{2-\sqrt{x+1}}=$

[a] does not exist [b] 0 [c] $\frac{1}{2}$ [d] 2

32) If $2x \le f(x) \le 3x^2-8$, then $\lim_{x\to 2} f(x)=$

[a] does not exist [b] -4 [c] 0 [d] 4

33) $\lim_{x\to 0} x\cos(x+\frac{1}{x})=$

[a] does not exist [b] 0 [c] ∞ [d] 1

34) $\lim_{x\to 0} x\sin(\frac{1}{x})=$

[a] does not exist [b] ∞ [c] 0 [d] 1

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

[a] does not exist [b] -1 [c] 0 [d] 1

36) If $4(x-1) \le f(x) \le x^3+x-2$, then $\lim_{x\to 1} f(x)=$

[a] does not exist [b] 1 [c] 0 [d] 4

37) If $\lim_{x\to 3}\frac{f(x)+4}{x-1}=3$, then $\lim_{x\to 3} f(x)=$

[a] 0 [b] 10 [c] 2 [d] 3

38) $\lim_{x\to 2}\frac{2^{-1}-(3x-4)^{-1}}{2-x}$

[A] does not exist [B] -3 [C] $\frac{3}{4}$ [D] $-\frac{3}{4}$

39) $\lim_{x\to 0}\frac{(x+1)^3-1}{x}$

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

40) If $\lim_{x\to 1}\frac{f(x)+3x}{x^2-5f(x)}=1$, then $\lim_{x\to 1} f(x)=$

[a] -1 [b] $-\frac{1}{3}$ [c] $-\frac{2}{3}$ [d] 3

41) $\lim_{x\to 4}\frac{x^2-6x+8}{x^2+x-20}=$

[a] does not exist [b] 0 [c] $\frac{2}{9}$ [d] 1

42) $\lim_{x\to -2}\frac{x^3+8}{x^2-x-6}=$

[a] does not exist [b] $-\frac{12}{5}$ [c] $-\frac{8}{5}$ [d] -12

43) $\lim_{x\to 1}\left[\frac{x^2-2}{x+4}+x^2-2x\right]=$

[a] does not exist [b] $\frac{6}{5}$ [c] -1 [d] $-\frac{6}{5}$

44) $\lim_{x\to -2}\frac{4x^2+6x-4}{2x^2-8}=$

[a] does not exist [b] 5 [c] $\frac{5}{4}$ [d] $-\frac{5}{4}$

45) $\lim_{x\to -1}\frac{x^2-2x-3}{x^5-x^3}=$

[a] does not exist [b] -2 [c] 2 [d] -4

46) $\lim_{x\to 3}\frac{\sqrt{2x+1}(x^2-9)}{(2x+3)(x-3)}=$

[a] $\frac{\sqrt{7}}{9}$ [b] $\frac{2}{3}$ [c] $\frac{\sqrt{7}}{3}$ [d] $\frac{2\sqrt{7}}{3}$

47) $\lim_{x\to 1}\frac{\sqrt{3-2x}-1}{x-1}=$

[a] -1 [b] 1 [c] $\frac{\sqrt{2}}{2}$ [d] $-\sqrt{2}$

48) $\lim_{x\to 0}\frac{(x+1)^2-1}{x}=$

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

49) $\lim_{x\to 1}\frac{\sqrt{2x+2}-2}{\sqrt{3x-2}-1}=$

[a] $-\frac{3}{2}$ [b] $\frac{2}{3}$ [c] $\frac{1}{3}$ [d] $-\frac{1}{3}$

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

[a] $-\frac{1}{6}$ [b] 3 [c] $\frac{1}{3}$ [d] $-\frac{1}{3}$

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

[a] 0 [b] ∞ [c] does not exist [d] -1

52) If $\lim_{x\to k} f(x) = -\frac{1}{2}$ and $\lim_{x\to k} g(x) = \frac{2}{3}$, then $\lim_{x\to k} \frac{f(x)}{g(x)} =$

[a] $\frac{1}{3}$ [b] $-\frac{1}{3}$ [c] -3 [d] $-\frac{3}{4}$

53) $\lim_{x\to 0} \frac{\sqrt{x+4}-2}{x} =$

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

54) $\lim_{x\to -1} \frac{x^2-5x-6}{x+1} =$

[a] 0 [b] 1 [c] does not exist [d] -7

55) $\lim_{x\to 0} \frac{(x+3)^{-1}-3^{-1}}{x}$

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

56) If $\lim_{x\to 1} f(x) = 3, \lim_{x\to 1} g(x) = -4, \lim_{x\to 1} h(x) = -1$, then $\lim_{x\to 1}\left(\frac{5f(x)}{2g(x)} + h(x)\right) =$

[a] $\frac{23}{8}$ [b] $\frac{7}{8}$ [c] -3 [d] $-\frac{23}{8}$

57) If $\lim_{x\to 1} g(x) = -4$ and $\lim_{x\to 1} h(x) = -1$, then $\lim_{x\to 1} \sqrt{g(x)h(x)} =$

[a] -2 [b] ± 2 [c] 2 [d] 3

58) If $\lim_{x\to 1} f(x) = 3, \lim_{x\to 1} g(x) = -4, \lim_{x\to 1} h(x) = -1$, then $\lim_{x\to 1}\left(2f(x)g(x)h(x)\right) =$

[a] 24 [b] 48 [c] 12 [d] -24