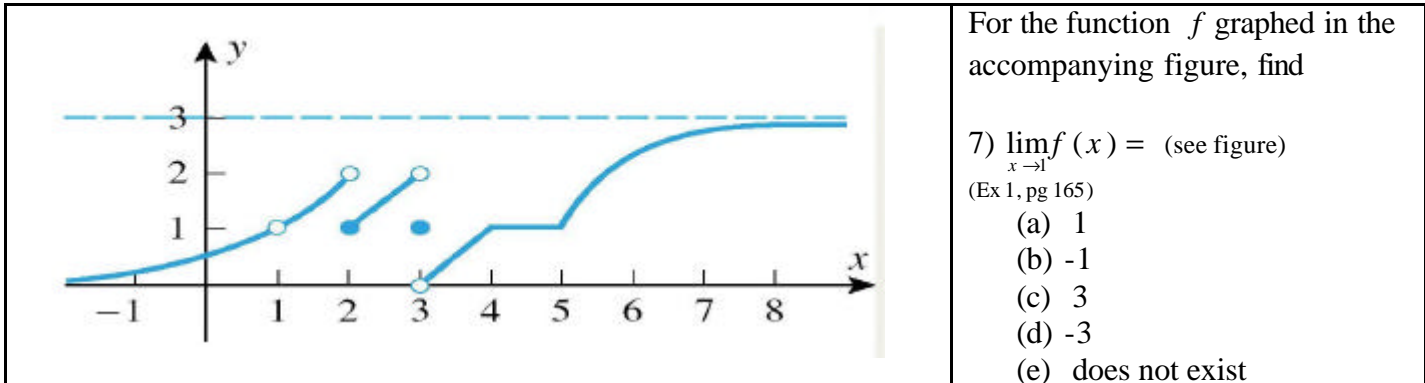**EXAM (1) FORM D**

For the function f graphed in the accompanying figure, find

7) $\lim\limits_{x \to 1^-} f(x) =$ (see figure)
(Ex 1, pg 165)
  (a) 1
  (b) -1
  (c) 3
  (d) -3
  (e) does not exist

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1) $\lim\limits_{x \to 2} f(x) =$ (see figure)
(Ex 1, pg 165)
  (a) 1
  (b) -1
  (c) 2
  (d) -2
  (e) does not exist

4) $\lim\limits_{x \to 3} f(x) =$ (see figure)
(Ex 1, pg 165)
  (a) 1
  (b) -1
  (c) 3
  (d) -3
  (e) does not exist

8) $\lim\limits_{x \to 4} f(x) =$ (see figure)
(Ex 1, pg 165)
  (a) 1
  (b) -1
  (c) 4
  (d) -4
  (e) does not exist

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2) $\lim\limits_{x \to +\infty} f(x) =$ (see figure)
(Ex 1, pg 165)
  (a) 1
  (b) -1
  (c) 3
  (d) -3
  (e) does not exist

5) $\lim\limits_{x \to -\infty} f(x) =$ (see figure)
(Ex 1, pg 165)
  (a) 1
  (b) -1
  (c) 3
  (d) 0
  (e) does not exist

9) $\lim\limits_{x \to 3^+} f(x) =$ (see figure)
(Ex 1, pg 165)
  (a) 1
  (b) -1
  (c) 3
  (d) 0
  (e) does not exist

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3) $\lim\limits_{x \to 3^-} f(x) =$ (see figure)
(Ex 1, pg 165)
  (a) 1
  (b) -1
  (c) 2
  (d) -2
  (e) does not exist

6) $\lim\limits_{x \to 0} f(x) =$ (see figure)
(Ex 1, pg 165)
  (a) 1
  (b) -1
  (c) 2
  (d) $\dfrac{1}{2}$
  (e) does not exist

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10) Find $\lim\limits_{x \to 2^-} \dfrac{x}{x^2 - 4} =$ (Ex19, pg130)
  (a) 0
  (b) 2
  (c) -2
  (d) $+\infty$
  (e) $-\infty$

11) Find $\lim\limits_{x \to 9} \dfrac{x - 9}{\sqrt{x} - 3} =$ (Ex29, pg130)
  (a) 3
  (b) -3
  (c) 6
  (d) -6
  (e) does not exist

12) Find $\lim\limits_{x \to 4^-} \dfrac{3 - x}{x^2 - 2x - 8} =$
(Ex25, pg130)
  (a) 4
  (b) 8
  (c) -8
  (d) $+\infty$
  (e) $-\infty$

13) Find $\lim\limits_{x\to -1} \dfrac{x^2+6x+5}{x^2-3x-4}=$

(Ex11, pgl30)

(a) $-\dfrac{4}{5}$

(b) $\dfrac{5}{4}$

(c) 0

(d) $+\infty$

(e) $-\infty$

14) Find $\lim\limits_{y\to -\infty} \dfrac{2-y}{\sqrt{7+6y^2}}=$

(Ex21, pgl37)

(a) $\dfrac{1}{\sqrt{7}}$

(b) $\dfrac{1}{\sqrt{6}}$

(c) 1

(d) $+\infty$

(e) $-\infty$

15) Given $\lim\limits_{x\to -1}(7x+5)=-2, e=0.01$
find a number d such that
$|f(x)-L|<e$ if $0<|x-a|<d$
(Ex11, pgl45)

(a) $d=\dfrac{1}{400}$

(b) $d=\dfrac{1}{500}$

(c) $d=\dfrac{1}{550}$

(d) $d=\dfrac{1}{600}$

(e) $d=\dfrac{1}{700}$

16) Let $f(x)=\dfrac{|x|}{x}$, which
statement is true (Ex29(c), pgl57)

(a) f has a removable discontinuity at x=0
(b) f(0)= 1
(c) $\lim\limits_{x\to 0} f(x)=1$
(d) f is continuous at x=0
(e) f is discontinuous at x=0

17) Find $\lim\limits_{x\to -\infty} \dfrac{x-2}{x^2+2x+1}=$

(Ex15, pgl36)

(a) 0

(b) -2

(c) 2

(d) $+\infty$

(e) $-\infty$

18) Find $\lim\limits_{x\to -\infty} \dfrac{\sqrt{3x^4+x}}{x^2-8}=$

(Ex23, pgl37)

(a) $\dfrac{\sqrt{3}}{8}$

(b) $\sqrt{3}$

(c) 8

(d) $+\infty$

(e) $-\infty$

19) Find the values of x (if any) at which f is not continuous.

$f(x)=\dfrac{x-4}{x^2-16}$ (Ex17, pgl57)

(a) x= 0, 4
(b) x= 0, -4
(c) x= 0, 4, -4
(d) x= 4, -4
(e) x= 0

20) Let $f(x)=\dfrac{x-2}{|x|-2}$, which statement is true (Ex29(a), pgl157)

(a) f has removable discontinuity at $x=\pm 2$
(b) f has removable discontinuity at x=2 and a not removable discontinuity at x=-2
(c) f has removable discontinuity at x=2 and a continuity at x=-2
(d) $\lim\limits_{x\to +2} f(x)=0$
(e) $\lim\limits_{x\to -2} f(x)=1$

21) Find $\lim\limits_{x\to +\infty} \sqrt[3]{\dfrac{2+3x-5x^2}{1+8x^2}}=$

(Ex17, pgl36)

(a) $-\dfrac{5}{2}$

(b) $-\sqrt[3]{\dfrac{5}{2}}$

(c) -5

(d) $+\infty$

(e) $-\infty$

22) Find $\lim\limits_{x\to +\infty}(\sqrt{x^2+3}-x)=$

(Ex31, pgl37)

(a) 0
(b) 3
(c) -3
(d) $+\infty$
(e) $-\infty$

23) Find the values of x (if any) at which f is not continuous.

$f(x)=\dfrac{x}{|x|-3}$ (Ex19, pgl57)

(a) x= 0, 3
(b) x= 0, -3
(c) x= 0, 3, -3
(d) x= 3, -3
(e) x= 0

King Fahd University of Petroleum and Minerals College of Sciences Department of Mathematical Sciences
MATH 101 Calculus I Instructor: Dr. Faisal Fairag

EXAM (1) FORM D

24) $f(x) = \begin{cases} k^2 x + 1 & x > 1 \\ k + 1 & x = 1 \\ 3kx - 1 & x < 1 \end{cases}$

(a) Find the values of k so that the function f has a removable discontinuity at x=1
(SHOW ALL YOUR WORK)

(b) Find the values of k so that the function f is continuous from the left at x=1
(SHOW ALL YOUR WORK)

25) State the intermediate value theorem.

26) Find $\lim\limits_{x\to-\infty}\dfrac{x^4+x^2+3x}{x+1}$ (**SHOW ALL YOUR WORK**)

27) Find $\lim\limits_{h\to0}\dfrac{|2+h|-2}{h}$ (**SHOW ALL YOUR WORK**)

Question	Mark
MCQ	
24 (a)	
24 (b)	
25	
26	
27	