

Course
1A

Student ID
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Test
Quiz 1

Question	2	3	4
Points		3.5	4.5
	MAX: 6.5	MAX: 4.5	MAX: 4.5

Question	5	6a	6b
Points			
	MAX: 3	MAX: 3.5	MAX: 10

Total
MAX: 32

Self Assessment [3 POINTS]

[a] What personal and/or study habits could you change to increase your likelihood of doing better on the next quiz ?

don't forget limit notation, don't skip steps - follow teacher's writing

[b] Based on your work on the prerequisites review packet and your performance on this test, what prerequisite skills should you improve on ?

trig

[2] $\lim_{x \rightarrow 1^+} (f(x) - 3) = 4 - 3 = 1$ $\lim_{x \rightarrow 1^-} (f(x) - 3) = 2 - 3 = -1$

$\lim_{x \rightarrow 1^+} \cos(f(x) - 3) = \cos 1$ $\lim_{x \rightarrow 1^-} \cos(f(x) - 3) = \cos(-1)$

SINCE $\cos x$ CONT. EVERYWHERE

SO $\lim_{x \rightarrow 1} \cos(f(x) - 3) = \cos 1$

[3] $\arctan x$ CONT FOR ALL x

$1 + \ln x$ CONT IF $x > 0$

$\frac{\arctan x}{1 + \ln x}$ CONT IF $x > 0$ AND $x \neq e^{-1}$

[4] $\lim_{x \rightarrow -3} \frac{\frac{27}{x^2} - \frac{18}{x(x+1)}}{x+3} \cdot \frac{x^2(x+1)}{x^2(x+1)} = \lim_{x \rightarrow -3} \frac{27(x+1) - 18x}{x^2(x+1)(x+3)}$

$\lim_{x \rightarrow -3} \frac{9x + 27}{x^2(x+1)(x+3)} = \lim_{x \rightarrow -3} \frac{9}{x^2(x+1)} = \frac{9}{-18} = -\frac{1}{2}$

$\lim_{x \rightarrow -3} \sin^{-1} \frac{\frac{27}{x^2} - \frac{18}{x(x+1)}}{x+3} = \sin^{-1}(-\frac{1}{2}) = -\frac{\pi}{6}$

SINCE $\sin^{-1} x$ CONT IF $-1 < x < 1$

[5] f NOT CONT IF $3 + 2x - x^2 = 0$

*

$(3-x)(1+x) = 0$

$x = 3, -1 \in (-2, 4)$

IVT DOES NOT APPLY

$$[6][a] \left| \frac{2 \left[\lim_{x \rightarrow 1} x \right]^2 - 3 \lim_{x \rightarrow 1} x - \lim_{x \rightarrow 1} 2}{\lim_{x \rightarrow 1} 2 + \lim_{x \rightarrow 1} x - \left[\lim_{x \rightarrow 1} x \right]^2} \right| = \left| \frac{2(1)^2 - 3(1) - 2}{2 + 1 - (1)^2} \right| = \left| \frac{-3}{2} \right|$$

$\left(\frac{1}{2} \right)$
 $\left(\frac{1}{2} \right)$

$$[6] \left(1\right) \left| \lim_{x \rightarrow 2^-} \frac{2x^2 - 3x - 2}{2 + x - x^2} \right| = \left| \lim_{x \rightarrow 2^-} \frac{(x-2)(2x+1)}{(x-2)(-x-1)} \right| = \left| \lim_{x \rightarrow 2^-} \frac{2x+1}{-x-1} \right| = \left| \frac{-5}{3} \right|$$

$\left(\frac{1}{2} \right)$
 $\left(\frac{1}{2} \right)$

$$\left(1\right) \left| \lim_{x \rightarrow 2^+} \frac{\sqrt{4x+1} - \sqrt{x+7}}{4-2x} \right| = \left| \frac{\sqrt{4x+1} - \sqrt{x+7}}{-2(x-2)} \cdot \frac{\sqrt{4x+1} + \sqrt{x+7}}{\sqrt{4x+1} + \sqrt{x+7}} \right|$$

$$= \left| \frac{3x-6}{-2(x-2)(\sqrt{4x+1} + \sqrt{x+7})} \right|$$

$$= \left| \frac{3}{2(\sqrt{4x+1} + \sqrt{x+7})} \right| = -\frac{3}{2(6)}$$

$$= \left| -\frac{1}{4} \right|$$

$\left(\frac{1}{2} \right)$ BOTH ONE-SIDED LIMITS EXIST

$$\left(\frac{1}{2} \right) \left| \lim_{x \rightarrow 2^-} f(x) \neq \lim_{x \rightarrow 2^+} f(x) \right| \rightarrow \left| \lim_{x \rightarrow 2} f(x) \text{ DNE} \right|$$

NOT CONT, JUMP DISCONT

$\left(\frac{1}{2} \right)$

(1)