[2][a] $\boxed{\lim_{x \to -1^+} \dfrac{\frac{2}{x+3} - 1}{\frac{3}{2x-1} + 1}}$ $= \lim_{x \to -1^+} \dfrac{\frac{2}{x+3} - 1}{\frac{3}{2x-1} + 1} \cdot \dfrac{(x+3)(2x-1)}{(x+3)(2x-1)}$

$\frac{1}{2}$ $\qquad \frac{0}{0}$

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

THIS MUST BE CORRECT

$= \lim_{x \to -1^+} \dfrac{4x - 2 - (2x^2 + 5x - 3)}{3x + 9 + (2x^2 + 5x - 3)}$

$= \boxed{\lim_{x \to -1^+} \dfrac{-2x^2 - x + 1}{2x^2 + 8x + 6}}$ $\frac{1}{2}$

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

$= \boxed{\lim_{x \to -1^+} \dfrac{-2x+1}{2x+6}} = \dfrac{-2(-1)+1}{2(-1)+6} = \boxed{\dfrac{3}{4}}$ ☆

$\frac{1}{2}$

GRADE AGAINST ONLY 1 VERSION

OR

SEE NEXT PAGE

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

$\frac{1}{2}$

$= \boxed{\lim_{x \to -1^+} \dfrac{\frac{-x-1}{x+3}}{\frac{2x+2}{2x-1}}}$ 1

THIS MUST BE CORRECT

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

$= \boxed{\lim_{x \to -1^+} \dfrac{1-2x}{2(x+3)}} = \dfrac{1-2(-1)}{2(-1+3)} = \boxed{\dfrac{3}{4}}$ ☆

$\frac{1}{2}$

SEE NEXT PAGE

$$\boxed{\lim_{x\to -1^-} \frac{x+\sqrt{x+2}}{1-x^2}} = \lim_{x\to -1^-} \frac{x+\sqrt{x+2}}{1-x^2}\cdot\frac{x-\sqrt{x+2}}{x-\sqrt{x+2}}$$

$\frac{1}{2}$

$\frac{0}{0}$

THIS MUST BE CORRECT

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

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

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

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

$$= \frac{-1-2}{(1- -1)(-1-\sqrt{1+2})} = \frac{-3}{2(-2)} = \boxed{\frac{3}{4}}$$

$$\boxed{\lim_{x\to -1} f(x) = \frac{3}{4}} \quad \frac{1}{2}$$

BOTH 1-SIDED LIMITS MUST EQUAL $\frac{3}{4}$ FOR $\frac{1}{2}$ POINT TOTAL

[b] $\boxed{\text{NO, SINCE } f(-1) \text{ DNE}}$ $\frac{1}{2}$

[3] $\frac{1}{2}$ $\boxed{-1 \leq \cos \frac{1}{\sqrt[3]{x}} \leq 1}$ FOR ALL $x \in (-\infty, \infty)$

$\frac{1}{2}$ $\boxed{-x^6 \leq x^6 \cos \frac{1}{\sqrt[3]{x}} \leq x^6}$ SINCE $x^6 \geq 0$

$\boxed{\lim_{x \to 0} -x^6 = -0^6 = 0 = \lim_{x \to 0} x^6}$ 1

BY $\boxed{\text{SQUEEZE THEOREM}}$, $\boxed{\lim_{x \to 0} x^6 \cos \frac{1}{\sqrt[3]{x}} = 0}$ $\frac{1}{2}$

$\frac{1}{2}$

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

THIS MUST BE CORRECT

$= \boxed{\left[\lim_{x\to -1^+} (1+f(x))\right]^2}$ $\frac{1}{2}$

$= \boxed{\left[\lim_{x\to -1^+} 1 + \lim_{x\to -1^+} f(x)\right]^2}$ $\frac{1}{2}$

$\frac{1}{2}$ $= \boxed{[1+0]^2} = 1$

THESE MUST BE CORRECT

$\lim_{x\to -1^-} [1+f(x)]^2 = \boxed{\left[\lim_{x\to -1^-} 1 + \lim_{x\to -1^-} f(x)\right]^2}$ $\frac{1}{2}$

$= \boxed{[1+-2]^2} = 1$

$\frac{1}{2}$

$\boxed{\lim_{x\to -1} [1+f(x)]^2 = 1}$ $\frac{1}{2}$

[5] $\boxed{\cos x,\ 2 \text{ ARE CONT. FOR ALL } x}$ $\frac{1}{2}$

$\boxed{\begin{array}{l}\sqrt{x} \text{ IS CONT FOR } x>0 \\ 2-\sqrt{x} \text{ IS CONT FOR } x>0\end{array}}$ $\frac{1}{2}$ MUST HAVE BOTH

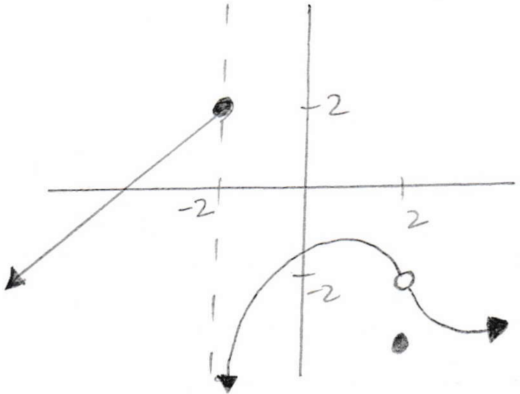
$\frac{1}{2}$

$\boxed{\dfrac{\cos x}{2-\sqrt{x}} \text{ IS CONT FOR } x>0 \text{ EXCEPT WHERE } 2-\sqrt{x}=0}$

IE. $2=\sqrt{x}$

IE. $\boxed{x=4}$ $\frac{1}{2}$

[6]



GRADED BY ME

(MANY SOLUTIONS POSSIBLE)

[7] $\lim_{x \to 1} \frac{x^2-2x+1}{x^2-3x+2} = \boxed{\lim_{x \to 1} \frac{(x-1)^2}{(x-1)(x-2)} = \lim_{x \to 1} \frac{x-1}{x-2}} = \frac{0}{-1} = \boxed{0}$

$\frac{1}{2}$ $\frac{1}{2}$

$\frac{0}{0}$

$\frac{1}{2}$ COS^{-1}X IS CONT. AT X=0 SINCE COS^{-1}X IS CONT. AT ALL $X \in (-1,1)$

$\lim_{x \to 1} \cos^{-1} \frac{x^2-2x+1}{x^2-3x+2} = \boxed{\lim_{t \to 0} \cos^{-1} t} = \boxed{\cos^{-1} 0} = \boxed{\frac{\pi}{2}}$

$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$

$t = \frac{x^2-2x+1}{x^2-3x+2}$