AP Calc AB: 1.7A

16. Prove: 1im (2x-5) = 3 18. Prove: 11m (3x+5) = -1 Scratch: Scratch: If 0< (x+2 < 8, then ((3x+5)+1) < E IF 0< 1x-4/< 8, then 1(2x-5)-3/ < E 1 (3x+5)+11< E ((2x-5)-3 1 < € 13x+61< 8 124-81< 8 1211x-41 < E 1311x+21<E 21x-4168 312+2148 1x-4/(= 1x+2/< = given $\epsilon > 0$, pick $\delta = \frac{\epsilon}{2}$ if $0 < |x-4| < \delta$, Proof: then ((2x-5)-3/4E Given $\varepsilon 70$, pick $\delta = \frac{\varepsilon}{3}$ if $0 < |x+2| < \delta$ then ((3x+5)+11< E ((2x-5)-3/ KME 2 /x-4 | KNE (3x+5)+1[AUSE W444V4/E 2 (x - 4) < 28 2 (x-4 (< 2 (=) 3 (x+2) kmg 218-41< 8 3 (x+2 (< 38 $3 \left| \times + 2 \right| < 3 \left(\frac{\varepsilon}{3} \right)$ Thus | (2x-5)-3 | < E 3 | x+2 | < € 348 Thus ((3x+5)+1) < E : lim (3x+5)) 1+2

(in the graph, segments don't look equal, but are supposed to be equal

my drawing skills suck)

Scratch:

$$\left|\frac{5}{4}\right|\left|\frac{4}{5}x-8\right|<\left|\frac{5}{4}\right|\varepsilon$$

Proof:

Given
$$\varepsilon > 0$$
, pick $\delta = \frac{5\varepsilon}{4}$ if $0 < |x-10| < \delta$, then $|(3-\frac{4}{5}x)+5| < \varepsilon$

$$\frac{4}{5} \left| x - 10 \right| < \frac{4}{5} \left(\frac{58}{4} \right)$$

Thus
$$(3-\frac{4}{5}x)+5$$
 < 2

$$\lim_{x\to 10} \left(3-\frac{4}{5}x\right) = -5$$

22. Prove: 11m = 3+20x = 6	24. Prove: for c = c
Stratch1	If $0 < x-a < \delta$, then $ c-c < \epsilon$
If $0 < 1 \times \frac{3}{2} < \delta$, then $ \frac{9 - 4 \times 2}{3 + 2 \times} - 6 < \epsilon$	c-c <{
$\left\{ \begin{array}{c} \frac{q-4x^2}{3+2\alpha} - 6 \end{array} \right\} < \varepsilon$	ο < ε Proof:
-4x2+9 3+2x	Given 870, let 870 if octa-al8, then 10-c1c8
$\left \frac{-(4x^2-9)}{3+2x} - 6 \right < \varepsilon$	0 < 8
$\left \frac{3+2x}{3+2x} \right = 6 \left \left\langle \xi \right $ $\left \frac{-(2x+3)(2x-3)}{(3+2x)} - 6 \right \left\langle \xi \right $	Thus, x-a
- (2x-3) - 6 < E	25. Prove: $\frac{\lim_{x\to 0} x^2}{x} = 0$
[-2x+3-6 (< E	Scratch:
[-2∝-3 < €	If $0 < x-0 < \delta$, then $ x^2-0 < \varepsilon$
$\left -2\right \left \alpha+\frac{3}{2}\right \leqslant \varepsilon$	x² < E
$2 \left x + \frac{3}{2} \right < \varepsilon$	(×1(x) < €
$\left x + \frac{3}{2} \right < \frac{\varepsilon}{2}$	1×11×1 < M(x) < E
Proof:	Assume:
Given $\varepsilon > 0$, pick $s = \frac{\varepsilon}{2}$ if $0 < x + \frac{3}{2} < \delta$, then	8 4 8
$\left \frac{9-4\kappa^2}{3+2\kappa}-6\right <\varepsilon$	
$\left(\frac{9-4x^2}{3+2x}-6\right)$	First State Superconduction and an account of the second state of
-2x -3	M = 1
$2\left x+\frac{3}{2}\right <2\delta$	Given E70, pick & & brill year
to the transport production of the control of the c	$S = \min (1, E)$. If $o < x < S$, then
$2\left(x+\frac{3}{2}\right) < 2\left(\frac{\varepsilon}{2}\right)$	consider m² < E
	122 < 1 × 1 × 1
6-UXL	[\a2] < (1)(E) \qquad \qqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqq
	Thus
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