Nama : Assyahrin Nanda
Nim : 13020200318

1. a) $\lim_{t \to 2} \frac{\sqrt{(t+\frac{1}{2})^3}}{4t+4} = \lim_{t \to 2} \frac{(t+\frac{1}{2})^2}{4t+4}$

$= \frac{(2+\frac{1}{2})^2}{4(2)+4}$

$= \frac{(\frac{5}{2})^2}{12}$

$= \frac{\frac{25}{4}}{12}$

$= \frac{25}{24}$ //

b) $\lim_{t \to 4} \frac{\sqrt{x}-2}{x-4} = \lim_{t \to 4} \frac{\sqrt{x}-2}{x-4} \times \frac{\sqrt{x}+2}{\sqrt{x}+2}$

$= \lim_{t \to 4} \frac{x-2}{x\sqrt{x}+2-4\sqrt{x}+2}$

$= \frac{4-2}{4\sqrt{4}+2-4\sqrt{4}+2}$

$= \frac{2}{8+2-8+2}$

$= \frac{2}{4} = \frac{1}{2}$ //

2. a) $\lim_{x \to 0} \frac{\sin 4x}{3x^2 + 5x} = \frac{4}{3^2 + 5}$

$= \frac{4}{9 + 5}$

$= \frac{4}{14}$

$= \frac{2}{7}$ //

b) $\lim_{x \to \infty} \frac{\sqrt{25x^2 - 9x - 6} - 5x + 3}{\sqrt{25x^2 - 9x - 6} - \sqrt{(5x+3)^2}}$

$\lim_{x \to \infty} \sqrt{25x^2 - 9x - 6} - \sqrt{(5x+3)^2}$

$\lim_{x \to \infty} \sqrt{25x^2 - 9x - 6} - \sqrt{25x^2 + 30x + 9}$

$\lim_{x \to \infty} \frac{25x^2 - 9x - 6 - 25x^2 + 30x + 9}{\sqrt{25x^2 - 9x - 6} - \sqrt{25x^2 + 30x + 9}}$

$\lim_{x \to \infty} \frac{21x + 3}{\sqrt{25x^2 - 9x - 6} - \sqrt{25x^2 + 30x + 9}}$ $\times \frac{\frac{1}{x}}{\frac{1}{x}}$

$\lim_{x \to \infty} \frac{\frac{21x}{x} + \frac{3}{x}}{\sqrt{\frac{25x^2}{x^2} - \frac{9x}{x^2} - \frac{6}{x^2}} - \sqrt{\frac{25x^2}{x^2} + \frac{30x}{x^2} + \frac{9}{x^2}}}$

$\lim_{x \to \infty} \frac{21 + \frac{3}{x}}{\sqrt{25 - \frac{9}{x} - \frac{6}{x^2}} - \sqrt{25 + \frac{30}{x} + \frac{9}{x^2}}}$

$= \frac{21 + \frac{3}{\infty}}{\sqrt{25 - \frac{9}{\infty} - \frac{6}{\infty}} - \sqrt{25 + \frac{30}{\infty} + \frac{9}{\infty}}}$

$= \frac{21}{\sqrt{25} - \sqrt{25}}$

$= \frac{21}{0} = \infty$ //

No.
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3. a) $2x^2+5x+3<0$

jawab

$x_{1,2} = \frac{-b^2 \pm \sqrt{b^2-4ac}}{2a}$

$= \frac{-5^2 \pm \sqrt{5^2-4(2)(3)}}{2(2)}$

$= \frac{25 \pm \sqrt{25-24}}{4}$

$x_1 = \frac{25+\sqrt{1}}{4}$ $\quad$ $x_2 = \frac{25-\sqrt{1}}{4}$

$= \frac{25+1}{4}$ $\quad$ $= \frac{25-1}{4}$

$x_1 = \frac{26}{4}$ $\quad$ $= \frac{24}{4} = 6$

$=$

b) $3x^2+17x-6>0$

jawab

$x_{1,2} = \frac{-b^2 \pm \sqrt{b^2-4ac}}{2a}$

$= \frac{-17^2 \pm \sqrt{17^2-4(3)(-6)}}{2(3)}$

$= \frac{289 \pm \sqrt{289+72}}{6}$

$= \frac{289 \pm \sqrt{361}}{6}$

$= \frac{289 \pm 19}{6}$

$x_1 = \frac{289+19}{6} = \frac{308}{6}$ $\quad$ $x_2 = \frac{289-19}{6} = \frac{270}{6}$

$= 45$

$= 51\frac{3}{3}$

c) $14x^2 + 11x - 15 \leq 0$

jawab

$$x_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{-11 \pm \sqrt{11^2 - 4(14)(-15)}}{2(11)}$$

$$= \frac{121 \pm \sqrt{121 + 840}}{22}$$

$$= \frac{121 \pm \sqrt{961}}{22}$$

$$= \frac{121 \pm 31}{22}$$

$$x_1 = \frac{121 + 31}{22} \qquad x_2 = \frac{121 - 31}{22}$$

$$= \frac{152}{22} \qquad = \frac{90}{22}$$

$$= \frac{76}{11} \qquad = \frac{45}{11}$$

4. a) $\left(\frac{x+3}{2x-1}\right) \leq 2$

$-2\left(\frac{x+3}{2x-1}\right) \leq 0$

$\left(\frac{-2x-6}{4x-4}\right) \leq 0$

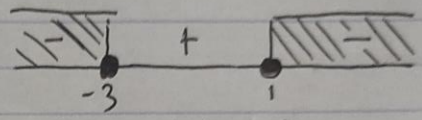
$\left(\frac{-2(0)-6}{4(0)-4}\right) = \frac{-6}{-4} = (+)$

$-2x-6 = 0$

$x = \frac{6}{-2} = -3$

$4x-4 = 0$

$x = \frac{4}{4} = 1$



jadi $x \leq -3$ atau $x \geq 1$

b) $2(2x-3) \leq (x+10)$

$(4x-6) < (x+10)$

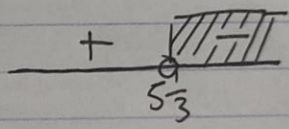
$4x-6-x-10 < 0$

$3x-16 < 0$

$3(0)-16 = 16\ (+)$

$3x-16 = 0$

$x = \frac{16}{3} = 5\frac{1}{3}$



jadi $x > 5\frac{1}{3}$

c) $(13x-11) < 2(x+6)$

$2\left(\frac{13x-11}{x+6}\right) < 0$

$\frac{26x-22}{2x+12} < 0$

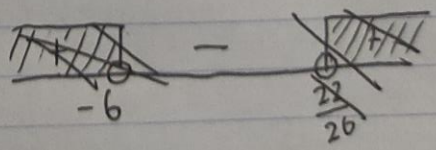
$\frac{26(0)-22}{2(0)+12} = \frac{-22}{12} = (-)$

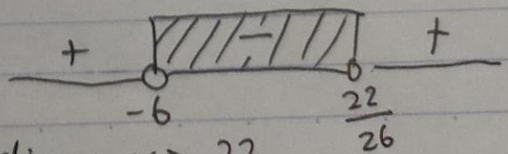
$26x-22 = 0$

$x = \frac{22}{26}$

$2x+12 = 0$

$x = \frac{-12}{2} = -6$





jadi $-6 > x > \frac{22}{26}$