

Worksheet 9/18/2024

Compute *algebraically* the following limits.

$$1) \lim_{t \rightarrow 7} \frac{3t^2 + 1}{t^2 - 5t + 2}$$

$$2) \lim_{x \rightarrow -3} \frac{x^2 + 3x}{x^2 - x - 12}$$

$$3) \lim_{x \rightarrow 4} \frac{x^2 + 3x}{x^2 - x - 12}$$

$$4) \lim_{x \rightarrow \infty} \frac{x^2 + 2x}{2x^2 - 1}$$

$$5) \lim_{x \rightarrow -3} \frac{x^2 + 3x}{x^2 - x - 12}$$

$$6) \lim_{x \rightarrow 0} \left(\frac{1}{x} - \frac{1}{|x|} \right)$$

$$7) \lim_{x \rightarrow 1} f(x) \text{ where}$$

$$f(x) = \begin{cases} x^2 + 1 & \text{if } x < 1 \\ (x-2)^2 - x & \text{if } x \geq 1 \end{cases}$$

$$8) \lim_{x \rightarrow 2} \frac{\sqrt{6-x}-2}{\sqrt{3-x}-1}$$

$$9) \lim_{x \rightarrow -\infty} \frac{\sqrt{x^2+1}}{x}$$

$$10) \lim_{x \rightarrow \infty} \frac{x+\sin x}{x}$$