

Topic 1: Using laws of limits

Evaluate the indicated limit.

1. $\lim_{x \rightarrow 0} (x^2 - 3x + 1)$

2. $\lim_{x \rightarrow 1} \sqrt{x^2 + 2x + 4}$

3. $\lim_{x \rightarrow 2} \frac{x - 5}{x^2 + 4}$

4. $\lim_{x \rightarrow 0} \frac{xe^{-2x+1}}{x^2 + 1}$

5. $\lim_{x \rightarrow 0} \frac{\sin x}{\tan x}$

6. $\lim_{x \rightarrow 0} \frac{\tan 2x}{x}$

7. $\lim_{x \rightarrow 1} \frac{x - 1}{\sqrt{x} - 1}$

8. $\lim_{x \rightarrow -1} f(x)$ where $f(x) = \begin{cases} 2x + 1, & \text{if } x < -1 \\ 3, & \text{if } -1 < x < 1 \\ 2x + 1, & \text{if } x > 1 \end{cases}$

9. $\lim_{x \rightarrow 4^+} \sqrt{16 - x^2}$

Answers

1) 1 2) $\sqrt{7}$ 3) $-\frac{3}{8}$ 4) 0 5) 1

6) 2 7) 2 8) *DNE* 9) *DNE*