

Math 232 Worksheet 8 - Indeterminate Forms

Find the limit. Use L'Hospital's Rule where appropriate.

$$(1) \lim_{x \rightarrow 1} \frac{x^3 - 2x^2 + x}{x^4 + 2x - 3} \quad (2) \lim_{x \rightarrow 0} \frac{\tan x}{x} \quad (3) \lim_{x \rightarrow 0} \frac{e^x - 1}{x} \quad (4) \lim_{x \rightarrow 0} \frac{x - \sin x}{x^3} \quad (5) \lim_{x \rightarrow -\infty} \frac{x^3 - x^2}{x^2 + 1}$$
$$(6) \lim_{x \rightarrow \infty} \frac{x^{100}}{e^x} \quad (7) \lim_{x \rightarrow \infty} \frac{\ln x}{x^{.01}} \quad (8) \lim_{x \rightarrow 0^+} \sqrt{x} \ln x \quad (9) \lim_{x \rightarrow 0^+} x^{\sqrt{x}} \quad (10) \lim_{x \rightarrow \infty} x^{1/\sqrt{x}}$$

Answer Keys:

(1) 0 (2) 1 (3) 1 (4) $1/6$ (5) $-\infty$ (6) 0 (7) 0 (8) 0 (9) 1 (10) 1