

Name : _____

Score : _____

Teacher : _____

Date : _____

L'Hopital's Rule

Find each limit.

$$1) \lim_{x \rightarrow 0} \frac{(x+2)\sin(4x)}{x^3 + 3x^2 - 4x}$$

$$2) \lim_{x \rightarrow 0} \frac{(x+3)\tan(7x)}{(x+2)\sin(6x)}$$

$$3) \lim_{x \rightarrow 0} \frac{(x+6)\tan(5x)}{x}$$

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

$$5) \lim_{x \rightarrow 0} \frac{1}{\tan(6x)\csc(-2x)}$$

$$6) \lim_{x \rightarrow -6} \frac{x^3 + 11x^2 + 36x + 36}{x^3 + 2x^2 - 24x}$$

$$7) \lim_{x \rightarrow \infty} \frac{e^x + \frac{2}{x}}{e^x + \frac{5}{x}}$$

$$8) \lim_{x \rightarrow \infty} \left(1 + \frac{6}{x}\right)^x$$



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Find each limit.

$$1) \lim_{x \rightarrow 0} \frac{(x+2)\sin(4x)}{x^3 + 3x^2 - 4x}$$

-2

$$2) \lim_{x \rightarrow 0} \frac{(x+3)\tan(7x)}{(x+2)\sin(6x)}$$

$\frac{7}{4}$

$$3) \lim_{x \rightarrow 0} \frac{(x+6)\tan(5x)}{x}$$

30

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

0

$$5) \lim_{x \rightarrow 0} \frac{1}{\tan(6x)\csc(-2x)}$$

$-\frac{1}{3}$

$$6) \lim_{x \rightarrow -6} \frac{x^3 + 11x^2 + 36x + 36}{x^3 + 2x^2 - 24x}$$

$\frac{1}{5}$

$$7) \lim_{x \rightarrow \infty} \frac{e^x + \frac{2}{x}}{e^x + \frac{5}{x}}$$

1

$$8) \lim_{x \rightarrow \infty} \left(1 + \frac{6}{x}\right)^x$$

e^6

