

# Limits

## LIMITS, DERIVATIVES AND APPLICATIONS OF DERIVATIVES (MAX/MIN PROBLEMS)

Find the following limits, if they exist. If they do not exist, write "does not exist."

$$62. \quad \lim_{n \rightarrow \infty} \frac{3n}{n-2}$$

$$63. \quad \lim_{x \rightarrow -2} \frac{x+2}{x^2-4}$$

$$64. \quad \lim_{x \rightarrow 7} \frac{3 - \sqrt{x+2}}{2x}$$

$$65. \quad \lim_{n \rightarrow \infty} \frac{2n^2 - n}{n+1}$$

$$66. \quad \lim_{n \rightarrow \infty} (-1)^n \left( \frac{3n-2}{n+1} \right)$$

$$67. \quad \lim_{x \rightarrow 3^+} \frac{x+3}{x-3}$$

$$68. \quad \lim_{x \rightarrow 1^-} \frac{5x^2 - 3x + 1}{x^2 - 5}$$

$$69. \quad \lim_{x \rightarrow 0} \frac{x}{1 - \sqrt{1-x}}$$

$$70. \quad \lim_{n \rightarrow \infty} \sin n$$

$$71. \quad \lim_{x \rightarrow 0} \frac{\frac{1}{x-1} - 1}{x}$$

# Limits

## Answers

62. 3

63.  $-\frac{1}{4}$

64. 0

65.  $-\infty$

66. does not exist (oscillates)

67.  $\infty$

68.  $-\frac{3}{4}$

69. 2

70. does not exist (oscillates)

71. does not exist

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Find the following limits, if they exist. If they do not exist, write "does not exist."

$$72. \quad \lim_{x \rightarrow 1} \frac{\sqrt{3} - \sqrt{x+2}}{1-x}$$

$$73. \quad \lim_{n \rightarrow \infty} \frac{3n^2 - n}{5n^2 + 1}$$

$$74. \quad \lim_{n \rightarrow 2} \frac{n^2 - 2n}{n^2 - 4}$$

$$75. \quad \lim_{n \rightarrow \infty} \frac{5n^2 - 3n + 1}{n^2 - 5}$$

$$76. \quad \lim_{n \rightarrow \infty} \frac{n-3}{\sqrt{n^2-9}}$$

$$77. \quad \lim_{x \rightarrow 2} \frac{x^3 - 8}{x - 2}$$

# Limits

## Answers

72.  $\frac{\sqrt{3}}{6}$

73.  $\frac{3}{5}$

74.  $\frac{1}{2}$

75. 5

76. 1

77. 12