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This set of WeBWorK problems covers limits and continuity, material in sections 1.5 and 1.6 of Brief Calculus. WeBWorK assignment Set1 is due on 09/18/2012 at 10:00pm EDT.

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1. (1 pt) Evaluate the limit

$$\lim_{a\to 1}\frac{a^3-a}{a^2-1}$$

Answer(s) submitted:

- 1

(correct)

Correct Answers:

- 1

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2. (1 pt) Evaluate the limit

$$\lim_{b\to 1}\frac{b^3-1}{b^2-1}$$

Answer(s) submitted:

- 3/2

(correct)

Correct Answers:

- 1.5

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3. (1 pt) Evaluate the limit

$$\lim_{a\to 9}\frac{9-a}{3-\sqrt{a}}$$

Answer(s) submitted:

- 6

(correct)

Correct Answers:

- 6

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4. (1 pt) Evaluate the limit

$$\lim_{x\to 7}\frac{\frac{1}{x}-\frac{1}{7}}{x-7}$$

Answer(s) submitted:

- -(1/49)

(correct)

Correct Answers:

- -0.0204081632653061

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5. (1 pt) Evaluate the limit

$$\lim_{b\to -18^-}\frac{|b+18|}{b+18}$$

Answer(s) submitted:

- -1

(correct)

Correct Answers:

- -1

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6. (1 pt) Let $f(x)=x+3$ if $x\le 2$ and $f(x)=3$ if $x>2$.

Sketch the graph of this function for yourself and find following limits if they exist (if not, enter N).

___1. $\lim_{x\to 2^-} f(x)$

___2. $\lim_{x\to 2^+} f(x)$

___3. $\lim_{x\to 2} f(x)$

Answer(s) submitted:

- 5
- 3
- N

(correct)

Correct Answers:

- 5
- 3
- N

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7. (1 pt) Let $f(x)=2$ if $x>7$,
$f(x)=6$ if $x=7$,
$f(x)=-x+8$ if $-1\le x<7$,
$f(x)=9$ if $x<-1$.

Sketch the graph of this function and find following limits if they exist (if not, enter DNE).

___1. $\lim_{x\to 7^-} f(x)$

___2. $\lim_{x\to 7^+} f(x)$

___3. $\lim_{x\to 7} f(x)$

___4. $\lim_{x\to -1^-} f(x)$

___5. $\lim_{x\to -1^+} f(x)$

___6. $\lim_{x\to -1} f(x)$

Answer(s) submitted:

- 1
- 2
- DNE

- 9
- 9
- 9

(correct)

Correct Answers:

- 1
- 2
- DNE
- 9
- 9
- 9

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8. (1 pt) Evaluate the limit

$$\lim_{h\to 0}\frac{1(6+h)^2+4(6+h)-(1\cdot 6^2+4\cdot 6)}{h}$$

_____

Answer(s) submitted:

- 16

(correct)

Correct Answers:

- 16

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9. (1 pt) For what value of the constant c is the function f continuous on $(-\infty,\infty)$ where

$$f(x)=\begin{cases}x^2-c & \text{if } x\in(-\infty,2)\\ cx+8 & \text{if } x\in[2,\infty)\end{cases}$$

_____

Answer(s) submitted:

- -4/3

(correct)

Correct Answers:

- -1.33333333333333

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10. (1 pt) The function f is given by the formula

$$f(x)=\frac{3x^3+15x^2-14x+24}{x+6}$$

when $x<-6$ and by the formula

$$f(x)=6x^2-5x+a$$

when $-6\le x$.

What value must be chosen for a in order to make this function continuous at -6?

a = _____

Answer(s) submitted:

- -3(-6)^2+2(-6)+4

(correct)

Correct Answers:

- -116

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11. (1 pt)

Evaluate the following limits. If needed, enter INF for $+\infty$ and MINF for $-\infty$.

(a)

$$\lim_{x\to+\infty}\frac{5x+10}{8x^2-7x+8}$$

_____

(b)

$$\lim_{x\to-\infty}\frac{5x+10}{8x^2-7x+8}$$

_____

Answer(s) submitted:

- 0
- 0

(correct)

Correct Answers:

- 0
- 0

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12. (1 pt)

Evaluate the following limits. If needed, enter INF for $+\infty$ and MINF for $-\infty$.

(a)

$$\lim_{x\to+\infty}\frac{\sqrt{3+4x^2}}{8+3x}=$$

_____

(b)

$$\lim_{x\to-\infty}\frac{\sqrt{3+4x^2}}{8+3x}=$$

_____

Answer(s) submitted:

- 2/3
- -2/3

(correct)

Correct Answers:

- 0.666666666666667
- -0.666666666666667

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13. (1 pt)

Evaluate the following limits. If needed, enter INF for $+\infty$ and MINF for $-\infty$.

(a)

$$\lim_{x\to+\infty}\left(\sqrt{x^2+9x+1}-x\right)=$$

_____

(b)

$$\lim_{x\to-\infty}\left(\sqrt{x^2+9x+1}-x\right)=$$

_____

Answer(s) submitted:

- 9/2
- INF

(correct)

Correct Answers:

- 4.5
- INF

14. (1 pt)

Evaluate the following limits. If needed, enter INF for ∞ and MINF for $-\infty$.

(a)

$$\lim_{x \to \frac{11}{2}^+} \frac{31x}{11-2x} =$$

(b)

$$\lim_{x \to \frac{11}{2}^-} \frac{31x}{11-2x} =$$

Answer(s) submitted:

- MINF
- INF

(correct)

Correct Answers:

- MINF
- INF