

AP Calculus Multiple Choice Questions - Chapter 2

1 Evaluate:

$$\lim_{x \rightarrow 0} \frac{2x^6 + 6x^3}{4x^5 + 3x^3}$$

- a 0
- c 1
- e Does not exist

- b 1/2
- d 2

	2.1c
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2 Evaluate:

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

- a 24
- c 12

- b 4
- d Does not Exist

	2.1c
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3 Evaluate:

$$\lim_{x \rightarrow 2} \sqrt{x + 2}$$

- a 1.414
- c 2

- b 2.236
- d Does not exist

	2.1c
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AP Calculus Multiple Choice Questions - Chapter 2

1 Evaluate the following one-sided limit:

$$\lim_{x \rightarrow 1^-} f(x) = \begin{cases} 2 - x & x \leq 1 \\ \frac{x}{2} + 1 & x > 1 \end{cases}$$

- a $5/2$
c 1
- b $3/2$
d 0

	2.1d
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2 Evaluate the following one-sided limit:

$$\lim_{x \rightarrow 1^+} f(x) = \begin{cases} 2 - x & x \leq 1 \\ \frac{x}{2} + 1 & x > 1 \end{cases}$$

- a $5/2$
c 1
- b $3/2$
d 0

	2.1d
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3 Evaluate the following one-sided limit:

$$\lim_{x \rightarrow 0^-} \frac{x^2 + 2x}{x}$$

- a 0
c -2
- b 2
d Does not exist

	2.1d
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AP Calculus Multiple Choice Questions - Chapter 2

1 Evaluate:

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

- a -2
b -1/4
c 1/2
d 1
e Does not exist

	2.2a
--	------

2 Evaluate

$$\lim_{x \rightarrow \infty} \frac{\ln x^2}{\ln x}$$

- a 1
b 2
c 0
d -1
e Does not exist

	2.2a
--	------

3 Evaluate

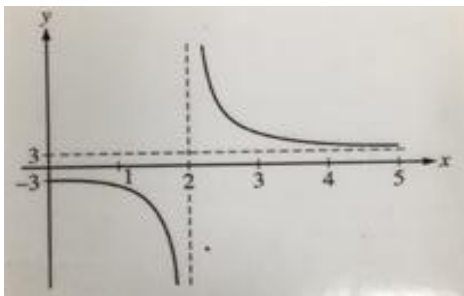
$$\lim_{x \rightarrow \infty} \frac{\ln(x+1)}{\ln x}$$

- a 0
b -1
c 1
d -2
e Does not exist

	2.2a
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AP Calculus Multiple Choice Questions - Chapter 2

1



The function f is given by $f(x) = \frac{ax^2 + 12}{x^2 + b}$. The figure above shows a portion of the graph of f .

Which of the following could be values of the constants a and b ?

- a** $a = -3, b = 2$
- b** $a = 2, b = -3$
- c** $a = 2, b = -2$
- d** $a = 3, b = -4$
- e** $a = 3, b = 4$

	2.2b
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2 Find any vertical asymptotes of the following function

$$f(x) = \frac{1}{x^2 - 4}$$

- a** No vertical asymptotes
- b** $x = -2, x = 2$
- c** $x = -2$
- d** $x = 2$

	2.2b
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3 Find any vertical asymptotes of the following function

$$f(x) = \frac{1 - x}{2x^2 - 5x - 3}$$

- a** $x = -1/2, x = 3$
- b** $x = 3$
- c** $x = 1$
- c** $x = 1, x = 3$

	2.2b
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1 Find any horizontal asymptotes

$$f(x) = 3x^2 - 2x + 1$$

- a $y = 3$
c $y = 0$
- b $y = 1$
d None

	2.2c
--	------

2 Find any horizontal asymptotes

$$f(x) = \frac{x-2}{2x^2+3x-5}$$

- a $y = 0$
c $y = 2$
- b $y = -2.5, y = 1$
d None

	2.2c
--	------

3 Find any horizontal asymptotes

$$f(x) = \frac{3x^2 - x + 5}{x^2 - 4}$$

- a $y = 2, y = -2$
c $y = 3$
- b $y = 2$
d None

	2.2c
--	------

AP Calculus Multiple Choice Questions - Chapter 2

1 What is the average rate of change of the function f given by $f(x) = x^4 - 5x$ on the closed interval $[0, 3]$?

- a 8.5 b 8.7
c 22 d 33
e 66

	2.4a
--	-------------

2 Find the average rate of change of $f(x) = x^2 + x$ over the interval $[1, 3]$.

- a -5 b $1/5$
c $1/4$ d 4
e 5

	2.4a
--	-------------

3 Find the average rate of change of $f(x) = \ln x$ over the interval $[1, 4]$.

- a 0.462 b 0.998
c 0.358 d 0.821
e 0.221

	2.4a
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AP Calculus Multiple Choice Questions - Chapter 2

1 Which of the following is an equation of the tangent to the graph of $f(x) = 2/x$ at $x = 1$?

- a $y = -2x$ b $y = 2x$
c $y = -2x + 4$ d $y = -x + 3$
e $y = x + 3$

	2.4b
--	------

2 Which of the following is an equation of the normal to the graph of $f(x) = 2/x$ at $x = 1$?

- a $y = 0.5x + 1.5$ b $y = -0.5x$
c $y = 0.5x + 2$ d $y = -0.5x + 2$
e $y = 2x + 5$

	2.4b
--	------

3 If the line L tangent to the graph of the function f at the point (2, 5) passes through the point (-1, -3), what is the slope of L?

- a $-3/8$ b $3/8$
c $-8/3$ d $8/3$
e Undefined

	2.4b
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AP Calculus Multiple Choice Questions - Chapter 2

1 Find the instantaneous rate of change of the position function $y = f(t)$ in feet at the given time t in seconds

$$f(t) = 3t - 7$$

$$t = 1$$

a -4 ft/sec

b 1 ft/sec

c 3 ft/sec

d -3 ft/sec

	2.4c
--	-------------

2 Find the instantaneous rate of change of the position function $y = f(t)$ in feet at the given time t in seconds

$$f(t) = (t + 1)/t$$

$$t = 2$$

a -0.25 ft/sec

b 0.25 ft/sec

c 0.50 ft/sec

d -0.50 ft/sec

	2.4c
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3 Find the instantaneous rate of change of the position function $y = f(t)$ in feet at the given time t in seconds

$$f(t) = t^3 - 1$$

$$t = 2$$

a 6 ft/sec

b 12 ft/sec

c 18 ft/sec

d 24 ft/sec

	2.4c
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