Calculus I Section 1.5 Homework

1) Complete the following tables:

$f(x) = \dfrac{3}{x^2 - 4}$

a)

x	-2.5	-2.01	-2.0001	-2.0000001
$f(x)$				

b)

x	-1.5	-1.91	-1.999	-1.999999
$f(x)$				

c) $\lim_{x \to -2^-} f(x) =$ _____ $\lim_{x \to -2^+} f(x) =$ _____ $\lim_{x \to -2} f(x) =$ _____

2) $f(x) = \tan\left(\dfrac{x}{4}\right)$

a)

x	-2.5	-2.01	-2.0001	-2.0000001
$f(x)$				

b)

x	-1.5	-1.91	-1.999	-1.999999
$f(x)$				

c) $\lim_{x \to -2^-} f(x) =$ _____ $\lim_{x \to -2^+} f(x) =$ _____ $\lim_{x \to -2} f(x) =$ _____

3) Complete the following tables:

$$f(x) = \frac{4}{x-3}$$

a)

x	3.5	3.9	3.999	3.999999
$f(x)$				

b)

x	4.5	4.01	4.0001	4.0000001
$f(x)$				

c) $\lim_{x \to 4^-} f(x) =$ _____ $\lim_{x \to 4^+} f(x) =$ _____ $\lim_{x \to 4} f(x) =$ _____

4) Complete the following tables:

$$f(x) = \frac{3x}{x^2 - x - 12}$$

a)

x	3.5	3.9	3.999	3.999999
$f(x)$				

b)

x	4.5	4.01	4.0001	4.0000001
$f(x)$				

c) $\lim_{x \to 4^-} f(x) =$ _____ $\lim_{x \to 4^+} f(x) =$ _____ $\lim_{x \to 4} f(x) =$ _____

5) Complete the following tables:

$$f(x) = \frac{12}{x^2 - x - 12}$$

a)

x	-3.5	-3.01	-3.0001	-3.0000001
$f(x)$				

b)

x	-2.5	-2.9	-2.999	-2.999999
$f(x)$				

c) $\lim_{x \to -3^-} f(x) =$ _____ $\lim_{x \to -3^+} f(x) =$ _____ $\lim_{x \to -3} f(x) =$ _____

6) Find vertical asymptotes and/or holes.

Hint: To find vertical asymptotes and/or holes, set denominator equal to zero and solve for x.

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

Vertical Asymptotes (if any) are: _____

7) Find vertical asymptotes and/or holes.

Hint: To find vertical asymptotes and/or holes, set denominator equal to zero and solve for x.

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

Vertical Asymptotes (if any) are: _____

8) $f(x) = \dfrac{12x^2 + 11x + 2}{3x^4 + 14x^3 - 25x^2 - 112x - 60}$

Hint: To find vertical asymptotes and/or holes, set denominator equal to zero and solve for x.

Hint: If $f(x)$ has a vertical asymptote at $x = c$ then $f(x)$ has a nonremovable discontinuity at $x = c$.

Hint: If $f(x)$ has a hole at $x = c$ then $f(x)$ has a removable discontinuity at $x = c$

a) Factor $12x^2 + 11x + 2 =$?

b) Factor $3x^4 + 14x^3 - 25x^2 - 112x - 60 =$?

c) Set $3x^4 + 14x^3 - 25x^2 - 112x - 60 = 0$ and solve for x:

x = ?

d) Vertical Asymptotes (if any) are: _____

e) Hole (if any) occurs at: _____

9) Find vertical asymptotes and/or holes.

Hint: To find vertical asymptotes and/or holes, set denominator equal to zero and solve for t.

$f(x) = \dfrac{x}{\cos x}$

a) Set $\cos x = 0$ and solve for x:

x = ?

b) Vertical Asymptotes (if any) are: _____

10) $f(x) = \dfrac{x^2 - 9}{x + 3}$

Hint: To find vertical asymptotes and/or holes, set denominator equal to zero and solve for x.

Hint: If $f(x)$ has a vertical asymptote at $x = c$ then $f(x)$ has a nonremovable discontinuity at $x = c$.

Hint: If $f(x)$ has a hole at $x = c$ then $f(x)$ has a removable discontinuity at $x = c$

a) Factor: $x^2 - 9 = ?$

b) Vertical Asymptotes (if any) are: _____

c) Holes (if any) occur at x = ? _____

d) $f(x)$ has a nonremovable discontinuity (if any) at $x = ?$

e) $f(x)$ has a removable discontinuity (if any) at $x = ?$

11) $f(x) = \dfrac{x^2 + 4}{x + 3}$

Hint: To find vertical asymptotes and/or holes, set denominator equal to zero and solve for x.

Hint: If $f(x)$ has a vertical asymptote at $x = c$ then $f(x)$ has a nonremovable discontinuity at $x = c$.

Hint: If $f(x)$ has a hole at $x = c$ then $f(x)$ has a removable discontinuity at $x = c$

a) Set $x + 3 = 0$ and solve for x:

x = ?

b) Vertical Asymptotes (if any) are: _____

c) Holes (if any) occur at x = ? _____

d) $f(x)$ has a nonremovable discontinuity (if any) at $x = ?$

e) $f(x)$ has a removable discontinuity (if any) at $x = ?$

12) Complete the following table:

$$f(x) = \frac{4x}{x+1}$$

a)

x	-0.5	-0.9	-0.999	-0.999999
$f(x)$				

b) $\lim_{x \to -1^+} f(x) =$ _____

13) Complete the following table:

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

a)

x	-3.5	-3.01	-3.0001	-3.0000001
$f(x)$				

b) $\lim_{x \to -3^-} f(x) =$ _____

14) Complete the following table:

$$f(x) = x + \frac{x}{x+4}$$

a)

x	-4.5	-4.01	-4.0001	-4.0000001
$f(x)$				

b) $\lim_{x \to -4^-} f(x) =$ _____

15) Complete the following table:

$$f(x) = \frac{5}{\cos x}$$

a)

x	0.5	0.01	0.0001	0.0000001
$f(x)$				

b) $\lim_{x \to 0^+} f(x) =$ _____