

limits - graph

- Ex 1 :
- a.) DNE
 - b.) 0
 - c.) -1
 - d.) DNE

Pg 2

- 1.) ∞
- 2.) DNE
- 3.) 2
- 4.) DNE
- 5.) 1

- 6.) DNE
- 7.) 0
- 8.) $-\infty$
- 9.) 1

Graphing, Continuity, and Limits for Rational Functions

Sketch the function $f(x) = \frac{x^2 - x - 6}{x^2 + x - 12}$ and complete the following:

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

$f(x)$ has a 1) vertical asymptote at $x = \underline{-4}$

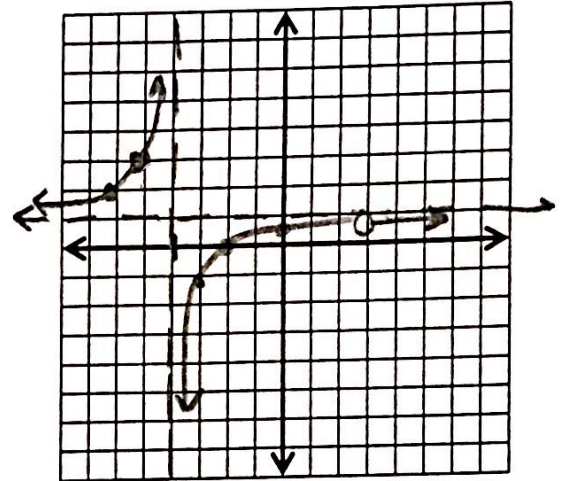
2) horizontal asymptote of $y = \underline{1}$

3) x - intercept of $\underline{-2}$

4) y - intercept of $\underline{\frac{1}{2}}$

5) removable discontinuity at $x = \underline{(3, \frac{5}{7})}$

and a 6) non-removable discontinuity at $x = \underline{-4}$



$$\frac{3+2}{3+4} = \frac{5}{7}$$

Evaluate the following:

7) $f(-4) = \underline{\phi}$ 8) $f(-2) = \underline{0}$ 9) $f(0) = \underline{\frac{1}{2}}$ 10) $f(3) = \underline{\phi}$

Evaluate the following limits or state "does not exist"

11) $\lim_{x \rightarrow -2} f(x) = \underline{0}$

16) $\lim_{x \rightarrow -4^-} f(x) = \underline{\infty}$

12) $\lim_{x \rightarrow 0} f(x) = \underline{\frac{1}{2}}$

17) $\lim_{x \rightarrow -4^+} f(x) = \underline{-\infty}$

13) $\lim_{x \rightarrow 3^-} f(x) = \underline{\frac{5}{7}}$

18) $\lim_{x \rightarrow -4} f(x) = \underline{\text{DNE}}$

14) $\lim_{x \rightarrow 3^+} f(x) = \underline{\frac{5}{7}}$

19) $\lim_{x \rightarrow +\infty} f(x) = \underline{1}$

15) $\lim_{x \rightarrow 3} f(x) = \underline{\frac{5}{7}}$

20) $\lim_{x \rightarrow -\infty} f(x) = \underline{1}$

(Form A)