

Name:

Class quiz 2

September 9, 2016

I) Find the following limits:

a-  $\lim_{x \rightarrow 2} \frac{\sqrt{x+14} - 4}{x-2} =$

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

c-  $\lim_{x \rightarrow 5^+} \frac{x-5}{|x-5|} =$

d-  $\lim_{x \rightarrow 3^-} \frac{12-x}{x-3} =$

II) Find all vertical asymptotes of the function  $f(x) = \frac{x-3}{(x^2-9)(x^2-3x-18)}$ .

III) Let  $f(x)$  be defined as follows:

$$f = \begin{cases} x + 2 & \text{if } x < 0 \\ -3 & \text{if } x = 0 \\ x^2 + 3 & \text{if } 0 < x \leq 3 \\ ax + 3 & \text{if } x > 3 \end{cases}$$

a-  $\lim_{x \rightarrow 0^-} f(x) =$   $\lim_{x \rightarrow 0^+} f(x) =$

b-  $\lim_{x \rightarrow 0} f(x) =$   $f(0) =$

c- For what value of  $a$  is the limit at 3 defined. ( Hint: limit at 3 defined means limit from the left is equal limit from the right )

IV) Draw a graph of a function  $f(x)$  on the interval  $(-5,1)$  that is always decreasing such that:

a-  $\lim_{x \rightarrow -4^-} f(x) = 2$   $\lim_{x \rightarrow -4^+} f(x) = 3$   $f(-4) = 3$

b-  $\lim_{x \rightarrow 0^-} f(x) = -4$   $\lim_{x \rightarrow 0^+} f(x) = -5$   $f(0) = -4$