

# homework-limits part1

12. Find  $\lim_{x \rightarrow 1^+} \frac{1}{x-1}$ .

13. Evaluate the following one sided limits:

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

(ii)  $\lim_{x \rightarrow 2^-} \frac{x-3}{x^2-4}$

(iii)  $\lim_{x \rightarrow 0^+} \frac{1}{3x}$

(iv)  $\lim_{x \rightarrow -8^+} \frac{2x}{x+8}$

(v)  $\lim_{x \rightarrow 0^+} \frac{2}{x^{1/5}}$

(vi)  $\lim_{x \rightarrow \frac{\pi}{2}^-} \tan x$

1.

10.  $\lim_{x \rightarrow -1} (4x^2 + 2)$

11.  $\lim_{x \rightarrow 1} \frac{x^3 - 3x + 1}{x - 1}$

12.  $\lim_{x \rightarrow 0} \frac{3x + 1}{x + 3}$

13.  $\lim_{x \rightarrow 3} \frac{x^2 - 9}{x + 2}$

14.  $\lim_{x \rightarrow 0} \frac{ax + b}{cx + d}, d \neq 0$

2.

1. 29.2 ex

17.  $\lim_{x \rightarrow 2} \left( \frac{1}{x-2} - \frac{2}{x^2-2x} \right)$

18.  $\lim_{x \rightarrow 1/4} \frac{4x-1}{2\sqrt{x}-1}$

19.  $\lim_{x \rightarrow 4} \frac{x^2-16}{\sqrt{x}-2}$

20.  $\lim_{x \rightarrow 0} \frac{(a+x)^2 - a^2}{x}$

3.

1. 29.3 ex

$$31. \lim_{x \rightarrow 2} \left\{ \frac{1}{x-2} - \frac{2(2x-3)}{x^3 - 3x^2 + 2x} \right\}$$

$$32. \lim_{x \rightarrow 1} \frac{\sqrt{x^2-1} + \sqrt{x-1}}{\sqrt{x^2-1}}, x > 1$$

$$33. \lim_{x \rightarrow 1} \left\{ \frac{x-2}{x^2-x} - \frac{1}{x^3-3x^2+2x} \right\}$$

$$34. \lim_{x \rightarrow 1} \frac{x^7 - 2x^5 + 1}{x^3 - 3x^2 + 2}$$

4.

same exercise as above sum

$$31. \lim_{h \rightarrow 0} \frac{\sqrt{x+h} - \sqrt{x}}{h}, x \neq 0$$

$$32. \lim_{x \rightarrow \sqrt{10}} \frac{\sqrt{7+2x} - (\sqrt{5} + \sqrt{2})}{x^2 - 10}$$

5.

6.