Limiting values of sequences

Example

Find the limiting value of the sequence as $n \to \infty$ for $\frac{6n+4}{3n-7}$. Sometimes we write the question as $\lim_{n\to\infty}\left(\frac{6n+4}{3n-7}\right)$ but it means the same thing.

As n becomes larger and larger, the 4 and -7 become almost insignificant.

So we can virtually forget these numbers and we are left with $\frac{6n}{3n} = \frac{6}{3} = 2$

Find the limiting value as $n \to \infty$ for the following equations

1 $\lim_{n\to\infty}\left(\frac{7+2n}{8n-2}\right)$

2 $\lim_{n\to\infty}\left(\frac{123+7n}{21n-42}\right)$

3 $\lim_{n\to\infty}\left(\frac{7-n}{5n+62}\right)$

4 $\lim_{n\to\infty}\left(\frac{18+2n^2}{12n^2-11}\right)$

5 $\lim_{n\to\infty}\left(\frac{7+24n}{16n}\right)$

6 $\lim_{n\to\infty}\left(1+\frac{2n}{3n}\right)$

7 $\lim_{n\to\infty}\left(\frac{4}{n}\right)$

8 $\lim_{n\to\infty}\left(\frac{n}{8n-2}\right)$

9 $\lim_{n\to\infty}\left(\frac{9n+84}{18-3n}\right)$

10 $\lim_{n\to\infty}\left(\frac{12n}{6+8n}\right)$

11 $\lim_{n\to\infty}\left(\frac{n}{15n}\right)$

12 $\lim_{n\to\infty}\left(\frac{5n+8}{25n-16}\right)$

13 $\lim_{n\to\infty}\left(\frac{n+2}{3n-6}\right)$

14 $\lim_{n\to\infty}\left(\frac{7+7n}{4n-2}\right)$

15 $\lim_{n\to\infty}\left(\frac{9(3+2n)}{5(3n-6)}\right)$

16 $\frac{3n+47}{n+1}$ is a sequence.

a. Find the number of the term with a value of 5.

b. Find the limiting value when $n \to \infty$

17 $\frac{8n+76}{3n-2}$ is a sequence.

a. Find the number of the term with a value of 4.

b. Find the limiting value when $n \to \infty$

18 $\frac{6n+11}{2n-3}$ is a sequence.

a. Find the number of the term with a value of 7.

b. Find the limiting value when $n \to \infty$