DIR1, zadaća 3, 30.03.2007.

LIMESI

1. Izračunajte limese:

   a)
   $$\lim_{x\to+\infty} -x^3 - 2x + 6 =$$

   b)
   $$\lim_{x\to 1} x^6 + 4x + 22 =$$

   c)
   $$\lim_{x\to-\infty} x^{100} + 3 =$$

2. Izračunajte limese:

   a)
   $$\lim_{x\to 2} \frac{x^3 - 2x + 1}{x + 4} =$$

   b)
   $$\lim_{x\to 3} \frac{x + 1}{x^3 - 6x^2 + 9x} =$$

   c)
   $$\lim_{x\to -1} \frac{x^2 + 4x + 3}{x^3 + 3x^2 + 3x + 1} =$$

   d)
   $$\lim_{x\to 0} \frac{x^3 + 2x}{x^4 + 34x^3 + x^2} =$$

3. Izračunajte limese:

   a)
   $$\lim_{x\to -1} \frac{x^3 + 1}{x + 1} =$$

   b)
   $$\lim_{x\to 2} \frac{x^2 - 4}{x^2 - 3x + 2} =$$

   c)
   $$\lim_{x\to 2} \frac{x^2 - 2x}{x - 1} =$$

   d)
   $$\lim_{x\to 1} \frac{1}{1 - x} - \frac{3}{1 - x^3} =$$

   e)
   $$\lim_{x\to a} \frac{x^2 - (a + 1)x + a}{x^3 - a^3} =$$

   (Napomena: Što ako je $a = 0$?)

f)

$$\lim_{x\to 1} \frac{x^3 - 3x + 2}{x^4 - 4x + 3} =$$

4. Izračunajte limese:

a)

$$\lim_{x\to +\infty} \frac{x^3 + x - 123}{x + 7} =$$

b)

$$\lim_{x\to -\infty} \frac{x^2 + 5x - 13}{x^3 + 7} =$$

c)

$$\lim_{x\to +\infty} \frac{2x^3 - x - 1}{-5x^3 + 7} =$$

d)

$$\lim_{x\to -\infty} \frac{-x^{1988} + x + 1}{20x^{1988} + 7x^4 + x + 1} =$$

5. Izračunajte limese tako da prvo racionalizirate brojnik ili nazivnik:

a)

$$\lim_{x\to 7} \frac{2 - \sqrt{x - 3}}{x^2 - 49} =$$

b)

$$\lim_{x\to 4} \frac{3 - \sqrt{5 + x}}{1 - \sqrt{5 - x}} =$$

c)

$$\lim_{x\to +\infty} \sqrt{x^2 - 5x + 6} - x =$$

d)

$$\lim_{x\to -\infty} x + \sqrt[3]{1 - x^3} =$$

e)

$$\lim_{x\to +\infty} \sqrt{x + a} - \sqrt{x} =$$

f)

$$\lim_{x\to 3} \frac{\sqrt{x^2 - 2x + 6} - \sqrt{x^2 + 2x - 6}}{\sqrt{x^2 - 4x + 3}} =$$

6. Izračunajte limese:

a)

$$\lim_{x\to 2} \frac{\sqrt{6 - x} - \sqrt{2 + x}}{2 - x} =$$

b)

$$\lim_{x\to +\infty} \sqrt{x^2 - 2x - 3} - x =$$

c)

$$\lim_{x\to+\infty} \frac{x^2+2}{\sqrt{x^3-1}} =$$

d)

$$\lim_{x\to 8} \frac{x-8}{\sqrt[3]{x}-2} =$$

e)

$$\lim_{x\to 64} \frac{\sqrt{x}-8}{\sqrt[3]{x}-4} =$$

RJEŠENJA

1. a) $-\infty$
   b) 27
   c) $+\infty$
2. a) 5/6
   b) $+\infty$
   c) $+\infty$
   d) limes ne postoji
3. a) 3
   b) 4
   c) 0
   d) -1
   e) $\frac{a-1}{3a^2}$
   f) 1/2
4. a) $+\infty$
   b) 0
   c) $-2/5$
   d) $-1/20$
5. a) $-1/56$
   b) $-1/3$
   c) $-5/2$
   d) 0
   e) 0
   f) $-1/3$
6. a) 1/2
   b) -1
   c) $+\infty$
   d) 12
   e) 3