Svar till tentor i inledande matematisk analys F1, tma970, ht 06

03-01-14

1.(a),(b) konvergent; **(c),(d)** divergent; **(e),(f),(h)** falskt; **(g)** sant

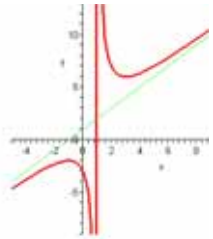
2.(a) 1, **(b)** e^6 **3.** lok. max: 0, lok. min: $\frac{21}{5}$, inflex.pkt: $-\frac{1}{5}, 0$, grafen:

4.(a) $\frac{2}{1+\tan\frac{x}{2}}+x+c$ **(b)** $\frac{24\pi}{5}$

03-08-18

1.(a),(b),(e),(f),(h) konvergent; **(c),(d),(g)** divergent **2.(a)** 3, **(b)** $\frac{3}{4}$

3. asymptoter: $x=1$, $y=x+1$, lok. max: -1, lok. min: 3, grafen:



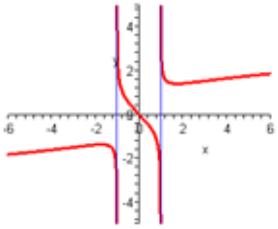
4.(a) $\ln\left(\sin^2 x+\sin x+1\right)-\frac{2}{\sqrt{3}}\arctan\left(\frac{2}{\sqrt{3}}\left(\sin x+\frac{1}{2}\right)\right)$ **(b)** π

5. $\ln\left(2+\sqrt{3}\right)$

03-10-22

1.(a),(d) konvergent; **(b),(c)** divergent; **(f),(h)** deriverbar; **(e),(g)** ej deriverbar **2.(a)** $\frac{1}{2}$ **(b)** -1 **3.** asymptoter: $x=\pm1$,

lok. max: $-\sqrt{3}$, lok. min: $\sqrt{3}$, infl. pkt. $-3, 0, 3$, grafen:

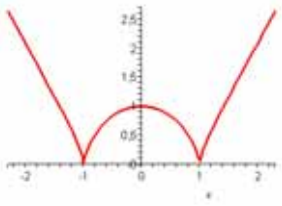


4.(a) $6\left(\sqrt[6]{x}-\arctan\sqrt[6]{x}\right)+c$ **(b)** $\frac{\pi^2-8}{32}$

04-01-13

1.(c),(d) konvergent; **(a),(b)** divergent; **(e),(g)** finns; **(f),(h)** finns ej

2.(a) ex. ej **(b)** 0 **3.** lok.min: ±1, infl.pkt: $\pm\sqrt{3}$, grafen:



4.(a) $\left(x+\frac{1}{2}\right)\ln\left(x^2+x+1\right)-2x+\sqrt{3}\arctan\left(\frac{2x+1}{\sqrt{3}}\right)+c$

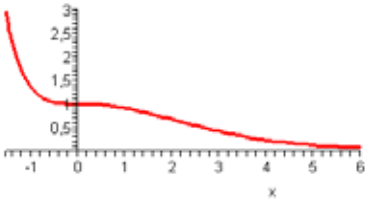
(b) $\frac{1}{\sqrt{5}}\left(\arctan\frac{4}{\sqrt{5}}-\arctan\frac{1}{\sqrt{5}}\right)$ **5.** $\frac{16}{27}\left(10\sqrt{10}-1\right)$

04-08-16

1.(b),(d),(e),(f),(h) konvergent; **(a),(c),(g)** divergent

2.(a) 1 **(b)** 1

3. asymptot: $y=0$ i ∞, infl.pkt: 0 och 2, grafen:



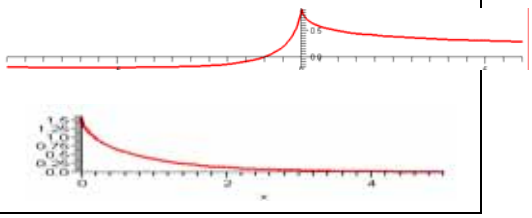
4.(a) $\left(\arctan\sqrt{x}\right)^2$ **(b)** $\frac{\pi-2}{8}$

05-10-19

1. (c) falsk, övriga sanna **2.** 0 **3.a)** f är deriverbar i alla punkter $x\neq0$

b) lok. minimum i $x=-3-2\sqrt{2}$, maximum i 0, asymptot: $y=0$

c) $F(x)=\begin{cases}2\sqrt{-x}-\ln(1-x)-2\arctan\sqrt{-x} & \text{om } x<0\\ 2\sqrt{x}-2\ln\left(1+\sqrt{x}\right) & \text{om } x\geq0\end{cases}$



4.a) $D_f=[0,\infty[$, f är strängt konvex, asymptot: $y=0$

b) $\ln\left(3+2\sqrt{2}\right)$