

Linköpings universitet  
Matematiska institutionen

**Matematisk analys, 764G07/KTR2.**

**Dugga 2.**

**2021-10-08 kl 14.00-17.00**

1. (a)  $x = 2$ .  
(b)  $-\frac{\pi}{18} + \frac{2}{3}\pi n < x < \frac{\pi}{6} + \frac{2}{3}\pi n$ .  
(c)  $x = 3$ .
2. (a) 3.  
(b) 2.  
(c)  $3 - \ln 2$ .
3. (a)  $a = -\frac{1}{2}$ .
4. (a)  $f'(x) = \frac{1}{1+x} + \frac{x^2+2x}{(1+x)^2} + 6e^{3x} = \frac{x^2+3x+1}{(1+x)^2} + 6e^{3x}$ .  
(b)  $f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h)-f(x)}{h} = \frac{1}{\sqrt{2x-1}}$ .  
(c)  $(f^{-1})'(10) = \frac{1}{13}$ .