1.1 # 21 d

$f(x) = x - x^2$

find $\dfrac{f(x+h) - f(x)}{h}$

$$= \frac{x+h-(x+h)^2 - \left(x - x^2\right)}{h}$$

$$= \frac{x+h-x^2-2xh-h^2 - x+x^2}{h} = \frac{h-2xh-h^2}{h}$$

$h(1-2x+h)$

$= 1-2x-h$

1.1 #27. find domain

$$\frac{1}{\sqrt[4]{x^2-5x}}$$

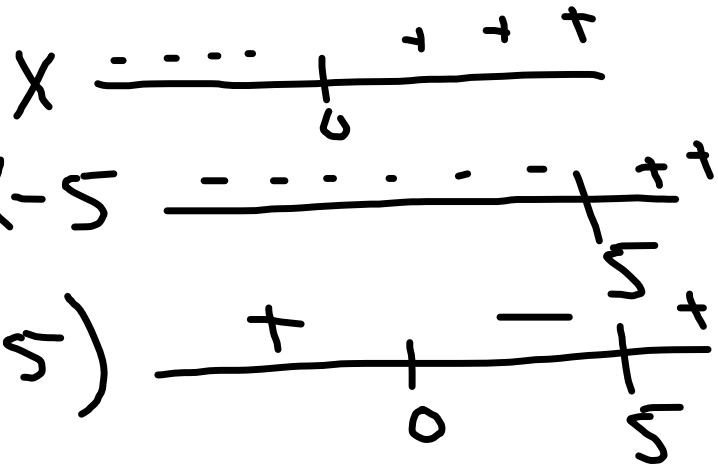
need $x^2-5x>0$

$x(x-5)>0$

sol.

$x<0$ or

$x>5$

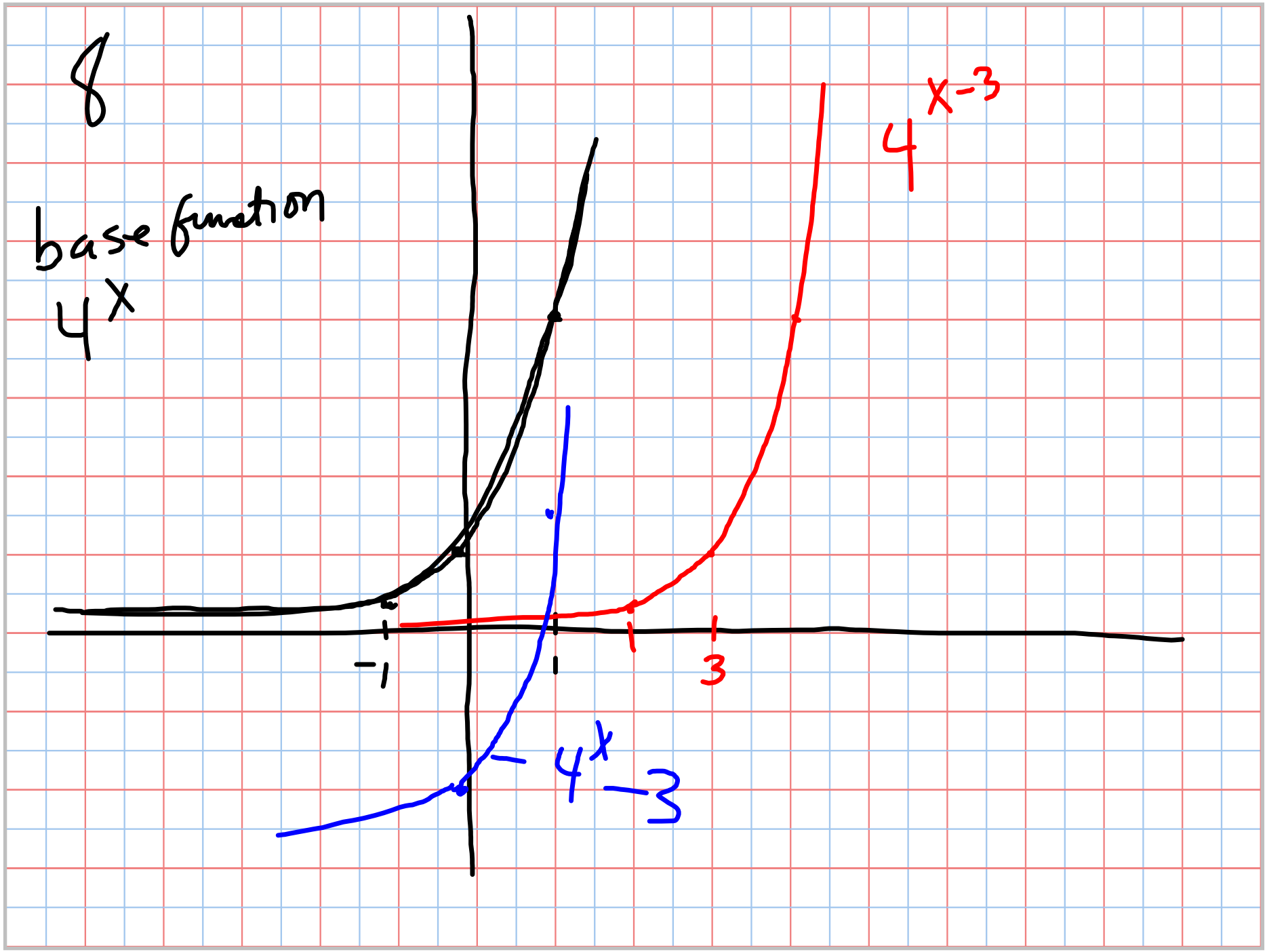


1.5

An exponential function has the form

$$f(x) = a^x$$

where a is a non-negative number (the base)


8
base function
4^x
4^{x-3}
-1
1
1
3
-4^x-3

#26

$A(0) = 2$

$A(15) = 1$

$A(30) = 1/2$

$A(45) = 1/4$

$A(60) = 1/8$

After t hours

$$2 \cdot \frac{1}{2^{t/15}} = A(t)$$

initial amount

half life

4 days is

$$A(96) = 2 \cdot 2^{-96/15}$$