

Quiz 1 Solutions

Problem 1

$$\begin{aligned}
 & e^{-\frac{1}{2} \ln(5x)} \\
 &= e^{\ln(5x)^{-1/2}} \quad (\text{by power rule of } \ln) \\
 &= (5x)^{-1/2} \quad (\text{b/c } e^{\ln} \text{ is the inverse of } \ln) \\
 &= \frac{1}{(5x)^{1/2}} = \boxed{\frac{1}{\sqrt{5x}}}
 \end{aligned}$$

Problem 2

$$\lim_{x \rightarrow -2^+} \frac{-3x^2}{(2+x)^3} = \boxed{-\infty}$$

We need the right sided limit so test a value close to but larger than -2 like -1.99

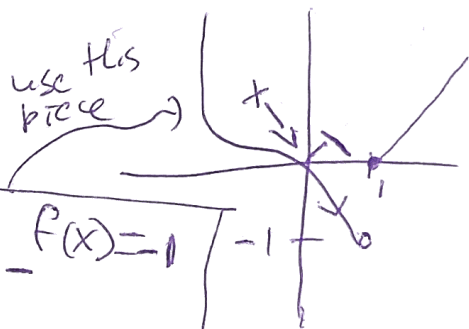
$$\frac{-3(-1.99)^2}{(2-1.99)^3} = \frac{-3(-1.99)^2}{(0.01)^3} = \frac{\text{number}}{(\text{+}) \text{tinny}} = -11880300 \rightarrow -\infty$$

table Method

x	-2	-1.999	-1.99	-1.9
f(x)	-	-1.19×10^{10}	-11880300	-10830

also tells us $\rightarrow -\infty$

Problem 3



(a) $\lim_{x \rightarrow 1^-} f(x) = -1$

(b) $f(1) = 0$

Just look where the filled in hole is.