Week 3 Recitation Problems

MATH:113, Recitations 304 and 305

Limit Problems

1. $\lim_{t\to -3} \frac{6+4t}{t^2+1}$
2. is the function $g(z) = \frac{6}{z^2-3z-10}$ continuous at
   (a) $z = -2$?
   (b) $z = 0$?
   (c) $z = 5$?
3. for the function
$$f(x) = \begin{cases} 7-4x & x < 1 \\ x^2+2 & x \geq 1 \end{cases}$$
   evaluate the limits
   (a) $\lim_{x\to -6} f(x)$
   (b) $\lim_{x\to 1} f(x)$
   (c) *(challenge!)* $\lim_{x\to\sqrt{3}} f(f(x))$

. . . . . .

What errors can you find?

$$\begin{aligned}
\lim_{t\to\pi} \frac{1-\cos^2(t)}{\sin(-t)} &= \lim_{t\to\pi} \frac{-\sin^2(t)}{\sin(-t)} \\
&= \lim_{t\to\pi} \frac{-\sin^2(t)}{-\sin(t)} \\
&= \frac{\lim_{t\to\pi} -\sin^2(t)}{\lim_{t\to\pi} -\sin(t)} \\
&= \frac{0}{0} \\
&= \text{DNE}.
\end{aligned}$$