Quiz 6

1. $\lim_{x\to 3} \frac{x^2-9}{x^2-x-6} = \lim_{x\to 3} \frac{(x-3)(x+3)}{(x-3)(x+2)} =$

$\lim_{x\to 3} \frac{x+3}{x+2} = \frac{6}{5}$

2. $\lim_{x\to 3} \frac{\sqrt{x+6}-3}{x-3} = \lim_{x\to 3} \frac{(\sqrt{x+6}-3)(\sqrt{x+6}+3)}{x-3\,(\sqrt{x+6}+3)} =$

$\lim_{x\to 3} \frac{x+6-9=x-3}{(x-3)(\sqrt{x+6}+3)} = \lim_{x\to 3} \frac{1}{\sqrt{x+6}+3} = \frac{1}{6}$

3. $\lim_{x\to -3} \frac{\sqrt{x+6}-3}{x-3} = \frac{\sqrt{3}-3}{-6}$

4. $\lim_{x\to 0} \frac{\tan 8x}{2x} = \lim_{x\to 0} \frac{8}{1}\boxed{\frac{\sin 8x}{8x}}\cdot\frac{1}{2}\boxed{\frac{1}{\cos 8x}} =$

$\frac{8}{1}\cdot 1\cdot\frac{1}{2}\cdot 1 = 4$ b/c boxed quantities have limit 1 as $x\to 0$