Limits and L'Hopitals Rule

Use L'Hopitals Rule to evaluate each limit.

1. $\lim_{x\to 2} \frac{x^2-x-2}{x-2}$

2. $\lim_{x\to 2} \frac{x^3-8}{x^2-4}$

3. $\lim_{x\to 2} \frac{\sqrt{2+x}-2}{x-2}$

4. $\lim_{x\to 0} \frac{\sin 5x}{x}$

5. $\lim_{x\to 0} \frac{\sin(2x)}{\sin(3x)}$

6. $\lim_{x\to 1} \frac{\sqrt[3]{x}-1}{x-1}$

7. $\lim_{x\to \infty} \frac{x^2+2x+1}{x-1}$

8. $\lim_{x\to 2} \frac{x^2-4x+4}{x^3-12x+16}$

9. $\lim_{x\to \infty} \frac{x^2}{e^{5x}}$

10. $\lim_{x\to \infty} \frac{\ln x}{x}$

11. $\lim_{x\to \frac{\pi}{2}} \frac{1-sinx}{1+\cos 2x}$

12. $\lim_{x\to 3} \frac{2x-6}{x^2-9}$