5.3.9 If this works,

$$\lim_{x\to\infty}\frac{2x^2+7}{5x^3+9}=\frac{2(\infty)^2+7}{5(\infty)^3+9}=\frac{2(\infty)+7}{5(\infty)+9}=\frac{(\infty)+7}{(\infty)+9}=\frac{\infty}{\infty}.$$

This doesn't quite work, but L'Hôpital's Rule applies:

$$\lim_{x\to\infty}\frac{2x^2+7}{5x^3+9}=\lim_{x\to\infty}\frac{\mathrm{d}(2x^2+7)}{\mathrm{d}(5x^3+9)}=\lim_{x\to\infty}\frac{4x\,\mathrm{d}x}{15x^2\,\mathrm{d}x}=\lim_{x\to\infty}\frac{4}{15x}=\frac{4}{15(\infty)}=\frac{4}{\infty}=0.$$

5.3.31 If this works,

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

This works; L'Hôpital's Rule is neither applicable nor necessary.