

Section 3.3

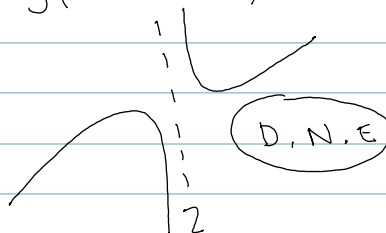
Limits and Continuity:  
(Algebraic Approach)

$$2) \lim_{x \rightarrow 0} \frac{x-3}{x-1} = \frac{0-3}{0-1} = \frac{-3}{-1} = \textcircled{3}$$

$$4) \lim_{x \rightarrow 2} \frac{x^2-1}{x-2} = \frac{2^2-1}{2-2} = \frac{3}{0}$$

calculator

$$y_1 = (x^2-1)/(x-2)$$



$$8) \lim_{x \rightarrow +\infty} \frac{6x^2 + 5x + 100}{3x^2 - 9} = \frac{6(\infty)^2 + 5(\infty) + 100}{3(\infty)^2 - 9} = \frac{\infty}{\infty} \text{ "Indeterminate" form}$$

$$\lim_{x \rightarrow \infty} \frac{\frac{6x^2}{x^2} + \frac{5x}{x^2} + \frac{100}{x^2}}{\frac{3x^2}{x^2} - \frac{9}{x^2}} \rightarrow \lim_{x \rightarrow \infty} \frac{6 + \frac{5}{x} + \frac{100}{x^2}}{3 - \frac{9}{x^2}}$$

$$\frac{\#}{\infty} = 0$$

$$\frac{\infty}{\#} = \infty$$

$$\rightarrow \frac{6 + \frac{5}{\infty} + \frac{100}{\infty^2}}{3 - \frac{9}{\infty^2}} = \frac{6}{3} = \textcircled{2}$$

$$18) \lim_{x \rightarrow -\infty} x e^{-x} = \frac{(-\infty) \cdot e^{\infty}}{(-\infty)(\infty)} = -\infty$$

$$\lim_{x \rightarrow \infty} x e^{-x} = \frac{\infty \cdot e^{-\infty}}{e^{\infty}} = 0$$