

1 2.3: Analytic Computation of Limits

Properties of Limits: (pp 91-93. Basis for the techniques used in the following examples.)

Examples:

$$\lim_{x \rightarrow 1} x^3 - 3x^2 + 1$$

$$\lim_{y \rightarrow 2} \frac{\sqrt{y+5} - \sqrt{7}}{y-2}$$

$$\lim_{t \rightarrow 2} \mathbf{r}(t) \text{ where } \mathbf{r}(t) = \left(\frac{5t^3 + 4}{t-3} \right) \mathbf{i} + \left(\frac{t^2 - 4}{t-2} \right) \mathbf{j}$$

Squeeze Theorem: If $g(x) \leq f(x) \leq h(x)$ and $\lim_{x \rightarrow a} g(x) = \lim_{x \rightarrow a} h(x) = L$, then

$$\lim_{x \rightarrow 0} x^2 \sin\left(\frac{1}{x}\right) =$$

On Your Own: $\lim_{x \rightarrow -4} \frac{2x + 8}{x^2 + x - 12} =$

$$-\frac{2}{7}$$