

Each problem is worth 5 points. Clear and complete justification is required for full credit.

1. Evaluate  $\lim_{x \rightarrow 3} (5x - 2)$ , explicitly naming each property of limits that you use in the process.

$$\lim_{x \rightarrow 3} (5x - 2) = \lim_{x \rightarrow 3} 5x - \lim_{x \rightarrow 3} 2$$

Difference Rule for Limits

$$= 5 \lim_{x \rightarrow 3} x - 2$$

Constant Multiple Rule for Limits;  
Constant Rule for Limits

$$= 5 \cdot 3 - 2$$

Rule  $\alpha$  for Limits

$$= 13$$

Excellent!

2. Evaluate  $\lim_{x \rightarrow 2} \frac{x^2}{7}$ , explicitly naming each property of limits that you use in the process.

Since  $\lim_{x \rightarrow 2} 7 \neq 0$ , Quotient Rule for Limits can be applied.

$$\text{Therefore, } \lim_{x \rightarrow 2} \frac{x^2}{7} = \frac{\lim_{x \rightarrow 2} x^2}{\lim_{x \rightarrow 2} 7} \quad \text{by } \underline{\text{Quotient Rule for Limits}}$$

$$= \frac{[\lim_{x \rightarrow 2} x]^2}{\lim_{x \rightarrow 2} 7} \quad \text{by } \underline{\text{Power Rule for Limits}}$$

$$= \frac{[2]^2}{\lim_{x \rightarrow 2} 7} \quad \text{by } \underline{\text{Rule } \alpha \text{ for Limits}}$$

$$= \frac{[2]^2}{7} \quad \text{by } \underline{\text{Constant Rule for Limits}}$$

$$\therefore = \left( \frac{4}{7} \right)$$

Nice  
Job!