

Please clearly show all your work on the following problems.

1) Find each of the following limits.

$$\lim_{x \rightarrow 2} \frac{x^2 + 4}{x - 5}$$

$$\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2}$$

2) Find each of the following derivatives.

$$\frac{d}{dx}(x^6 + 4x^3 + 7)$$

$$\frac{d}{dx} e^{\sin(x^2 + 2x)}$$

3) Find each of the following integrals.

$$\int_1^2 4x^3 + 7 dx$$

$$\int 2x(x^2 + 1)^5 dx$$