Pre-Calculus Homework 11E

Name: _____

(**#1**) Memorize the following simple derivatives:

Exponential: $\frac{d}{dx}[e^x] = e^x$ $\frac{d}{dx}[\ln(x)] = \frac{1}{x}$

Trigonometric: $\frac{d}{dx}[\sin(x)] = \cos(x)$ $\frac{d}{dx}[\cos(x)] = -\sin(x)$ $\frac{d}{dx}[\tan(x)] = sec^2(x)$

(**#2**) Differentiate each function by x. Remember to use the product or quotient rules where appropriate.

$f(x) = e^x(x^2 - 4x + 4)$

$g(x) = \sin(x)\ln(x)$

$h(x) = \frac{e^x}{x}$

$j(x) = \frac{2\sin(x)}{\tan(x) + e^x}$

(**#3**) Find all maximum and minimum values for the given function.

$a(x) = 2x^3 - \frac{15}{2}x^2 - 36x + 4$

$b(x) = \frac{x+1}{2x^2 - 3x - 2}$

(**#4**) Use the given graphs to draw the derivatives of these functions.