Show all your work. Due April 18th, 2017.

Name:
Student ID:

1. (**Absolute Extrema(Page 326)**)
   Find the absolute maximum and absolute minimum values of

$$f(x) = x^3 - 12x$$

   on each of the following intervals: (A)$[-5, 5]$ (B) $[-3, 3]$ (C) $[-3, 1]$

2. (**Sketch the Graph of a Function(Page 310-323**)
   Summarize the pertinent information obtained by applying the graphing strategy and sketch the graph of $f(x) = \frac{2x-4}{x+2}$

3. (**Indefinite Integral(Page 351)**) Note that

$$\frac{d}{dx}(x^3) = 3x^2$$

(A) Find all antiderivatives of $f(x) = 3x^2$.
(B) Graph the antiderivative of $f(x) = 3x^2$ that passes through the point $(0, 0)$; through the point $(0, 1)$; through the point $(0, 2)$.
(C) How are the graphs of the three antiderivatives in part (B) related?

4. (**Evaluate Indefinite Integrals(Page 354-355)**) Find each indefinite integral:
(A) $\int 3dx$
(B) $\int 10e^t dt$
(C) $\int 3x^4 dx$
(D) $\int (2x^5 - 3x^2 + 2)dx$
(E) $\int (\frac{3}{x} - 4e^x)dx$
(F) $\int \frac{x^4 - 8x^3}{x^2} dx$
(G) $\int (x^2 - 1)(x + 3)dx$
(H) $\int (8\sqrt{x} - \frac{6}{\sqrt{x}})dx$