POW # 24 Due Friday not Saturday:
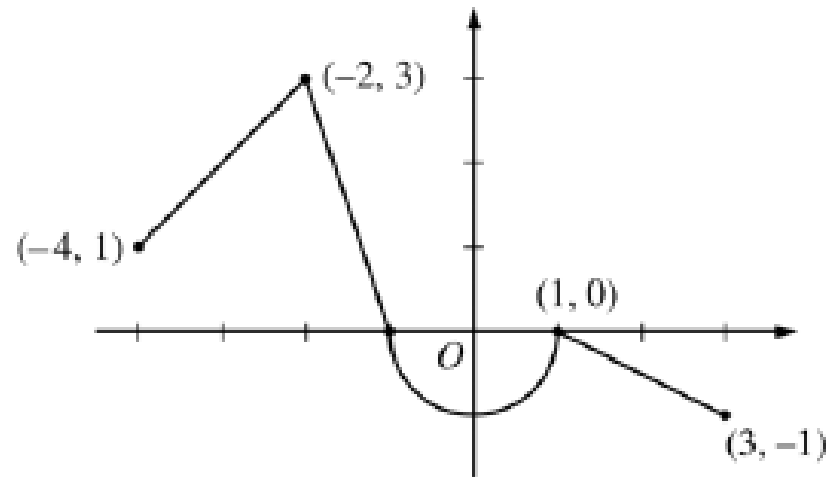
Let f be the continuous function defined on $[-4, 3]$ whose graph, consisting of three line segments and a semicircle centered at the origin, is given above. Let g be the function given by $g(x) = \int_1^x f(t)\, dt$.

(a) Find the values of $g(2)$ and $g(-2)$.

(b) For each of $g'(-3)$ and $g''(-3)$, find the value or state that it does not exist.

(c) Find the x-coordinate of each point at which the graph of g has a horizontal tangent line. For each of these points, determine whether g has a relative minimum, relative maximum, or neither a minimum nor a maximum at the point. Justify your answers.

(d) For $-4 < x < 3$, find all values of x for which the graph of g has a point of inflection. Explain your reasoning.

Graph of f

(−2, 3)

(−4, 1)

(1, 0)

O

(3, −1)

Pre-Calc POW # 24:   (HOW #24 for CAB)

POW # 24 Due Friday not Saturday:

Question: A
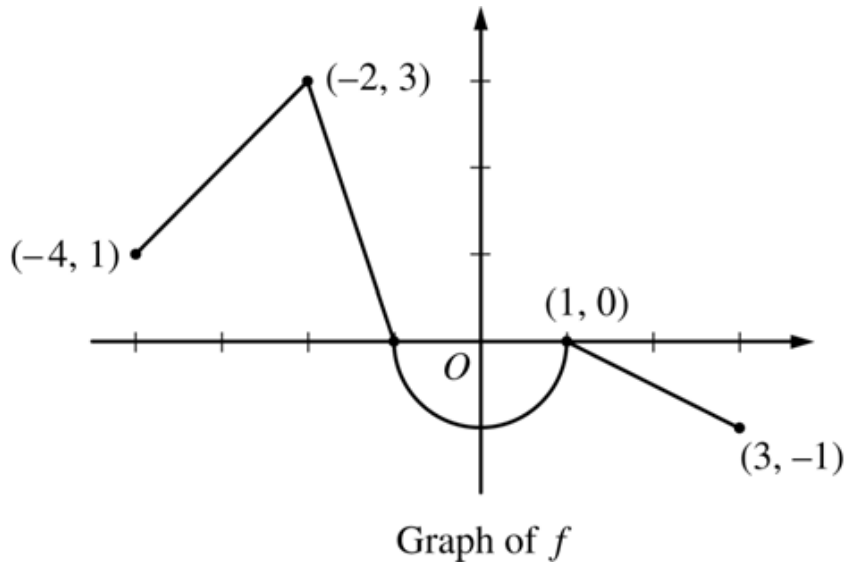
Graph of f

i.   Find the area between the x-axis and the graph of f: NB: The area below the x-axis is negative, while the area above the x-axis is positive.

ii. Write the piecewise equation that represent f.

iii. Is f a polynomial function? Justify your answer. (See page 171 Pre-Calc Book)
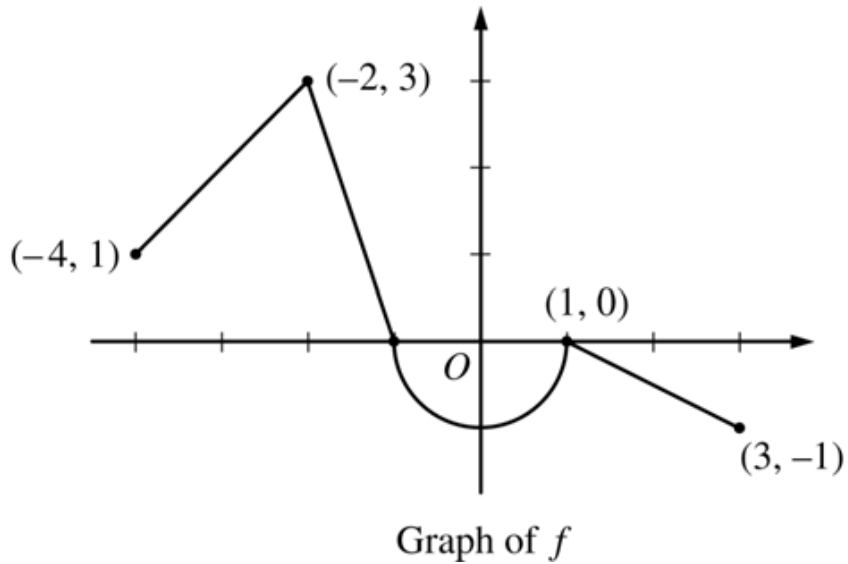
Question B:

Determine the first and second derivatives of f and g. and evaluate $f'(2)$ and $g''(-2)$ for the given polynomials below.

$$f(x) = 3x^4 - 5x^2 - 7x \quad and \quad g(x) = -4x^3 + 8x^2$$

Question: 1

(−2, 3)

(−4, 1)

(1, 0)

O

(3, −1)

Graph of f

a) Find the area between the x-axis and the graph of f: NB: The area below the x-axis is negative, while the area above the x-axis is positive.

b) Write the piecewise equation that represent f.

c) Is f a polynomial function? Justify your answer. (See page 171 Pre-Calc. Book)