AP Calculus SHORT VERSION
Review for FINAL EXAM

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Integration Techniques

Name_____

$\int 3x^2(\sin x)dx$

2. $\int e^{2x}(\sin 3x)dx$

$\int \frac{2}{(x+1)^3}dx$

4. $\int \frac{3x-1}{x^2-x-6}dx$

5. $\int \sin^5 x dx$

6. $\int \sqrt{(1-36x^2)}dx$

7. $\int \frac{dx}{\sqrt{9+x^2}}$

1. $-3x^2\cos x + 6x\sin x + 6\cos x + C$

2. $\frac{-3}{13}e^{2x}\cos 3x + \frac{2}{13}e^{2x}\sin 3x + C$

3. $-(x+1)^{-2} + C$

4. $\frac{8}{5}\ln|x-3| + \frac{7}{5}\ln|x+2| + C$

5. $-\cos x + \frac{2}{3}\cos^3 x - \frac{1}{5}\cos^5 x + C$

6. $\frac{1}{12}\sin^{-1}(6x) + \frac{1}{2}x\sqrt{1-36x^2} + C$

7. $\ln\left|\sqrt{x^2+9}+x\right| + C$

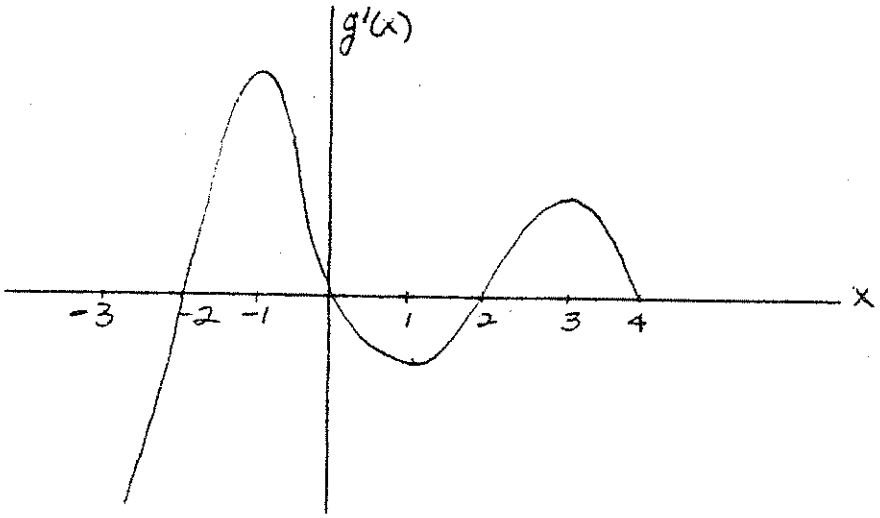
Section 8.2

1) The figure below shows the graph of g'(x), the derivative of a function g(x) with domain [-3, 4].

A) Determine the values of x for which g(x) has a relative minimum, and a reative maximum. Justify your answer.

B) Determine the values of x for which g(x) is concave down and concave up. Justify your answer.

C) Based on the information given and the fact that g(-3)=3 and g(4)=6, sketch a graph for g(x).

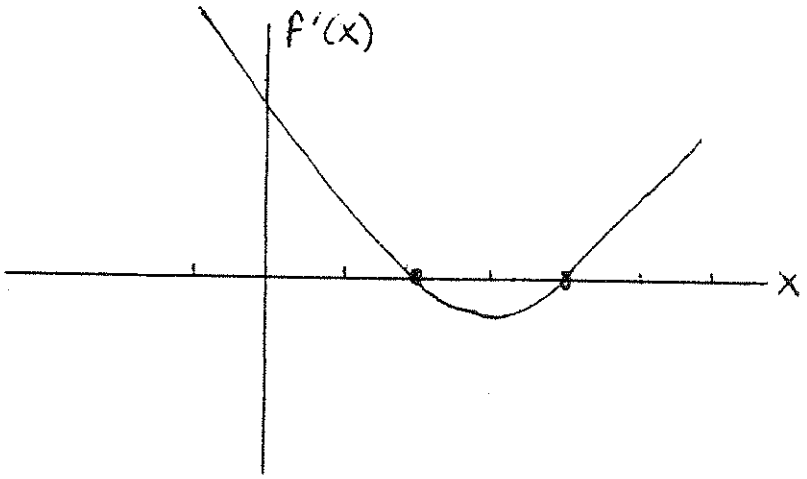


2) The figure below shows the graph of f'(x), the derivative of a function f(x) with domain [-1, 6].

A) Determine the values of x for which f(x) has a relative minimum or a reative maximum. Justify your answer.

B) Determine the values of x for which f(x) is concave down or concave up. Justify your answer.

C) Based on the information given and the fact that f(-1)=5 and f(6)=1, sketch a graph for f(x).



BE ABLE TO SET UP & SOLVE SOLIDS OF REVOLUTION PROBLEMS