AP Calculus BC Name_____

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Unit 2 Quiz Review

Date_____ Block____

For each problem, find the values of *c* that satisfy the Mean Value Theorem for Integrals.

1) $f(x) = -x + 1;\ [2, 5]$

2) $f(x) = 2x + 2;\ [-3, 0]$

3) $f(x) = \frac{2}{x^2};\ [2, 3]$

4) $f(x) = (x + 1)^{\frac{1}{2}};\ [-1, 2]$

For each problem, find the open intervals where the function is increasing and decreasing.

5) $f(x) = \frac{x^3}{x^2 - 1}$

6) $f(x) = -\frac{3}{16}(x + 1)^{\frac{4}{3}} + \frac{3}{2}(x + 1)^{\frac{1}{3}} - 2$

7) $f(x) = \frac{9x^2 - 9}{x^3}$

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8) $f(x) = 2\sin(2x);\ [-\pi, \pi]$

For each problem, find the open intervals where the function is concave up and concave down.

9) $f(x) = \sin(x);\ [-\pi, \pi]$

10) $f(x) = -\dfrac{x^2}{2x+2}$

11) $f(x) = -\dfrac{1}{6}x^{\frac{7}{3}} + \dfrac{14}{3}x^{\frac{1}{3}} - 2$

12) $f(x) = \left(\dfrac{x-1}{x+2}\right)^2$

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For each problem, find all points of relative minima and maxima.

13) $f(x) = \frac{1}{6}(x-2)^{\frac{7}{3}} - \frac{14}{3}(x-2)^{\frac{1}{3}} - 1$

14) $f(x) = -\frac{16x}{x^2+16}$

15) $f(x) = 2\sin(2x);\ [-\pi, \pi]$

16) $f(x) = -(6x+12)^{\frac{2}{3}}$

For each problem, find all points of absolute minima and maxima on the given interval.

17) $f(x) = x^2 - 6x + 8;\ \ [1, 4]$

18) $f(x) = (7x-21)^{\frac{1}{3}};\ \ [-2, 4]$

19) $f(x) = -\sin(2x);\ \ [-\frac{\pi}{2}, -\frac{\pi}{3}]$

20) $f(x) = \frac{1}{6}(x+2)^{\frac{7}{3}} - \frac{14}{3}(x+2)^{\frac{1}{3}} - 2;\ \ [-6, -1]$

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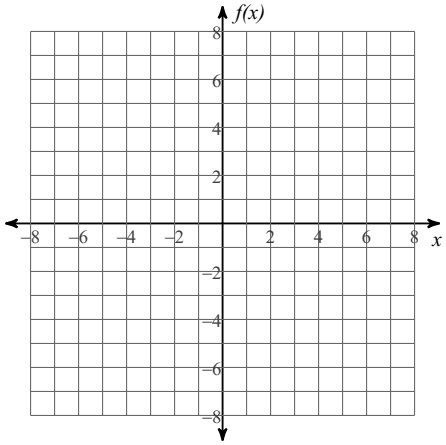
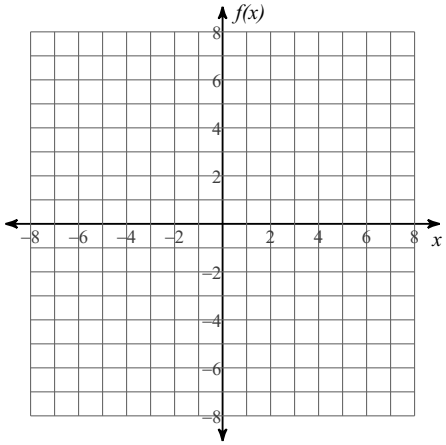
For each problem, find the: x and y intercepts, asymptotes, x-coordinates of the critical points, open intervals where the function is increasing and decreasing, x-coordinates of the inflection points, open intervals where the function is concave up and concave down, and relative minima and maxima. Using this information, sketch the graph of the function.

21) $f(x) = (x+4)^{\frac{1}{3}}$



22) $f(x) = -\dfrac{x^2}{2x+2}$



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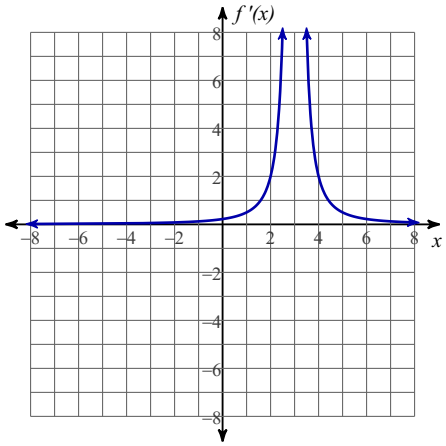
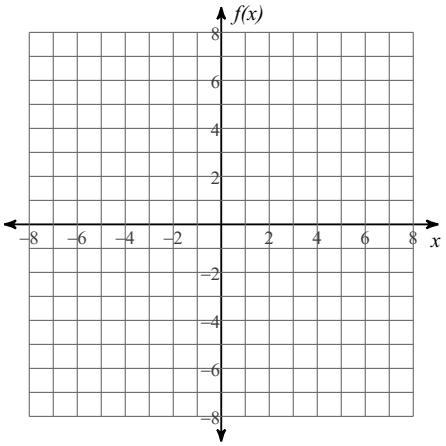
Given the graph of $f'(x)$, sketch a possible graph of $f(x)$.

23)





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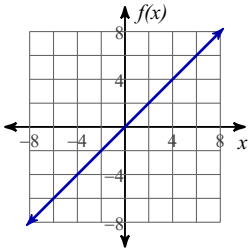

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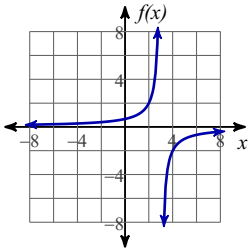

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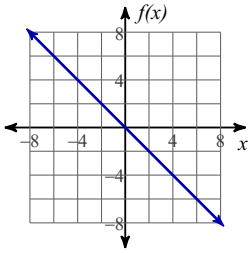

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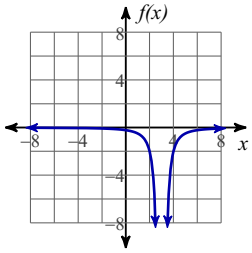

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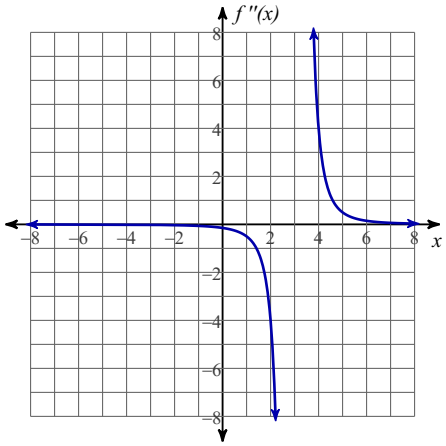
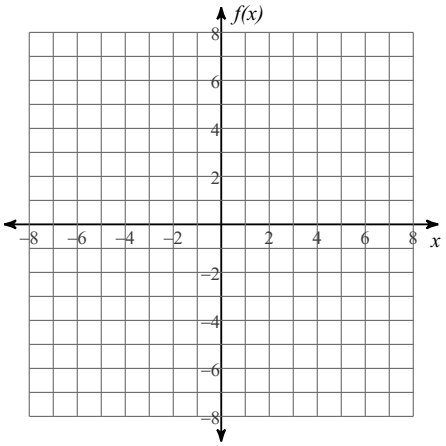
Given the graph of $f''(x)$, sketch a possible graph of $f(x)$.

24)





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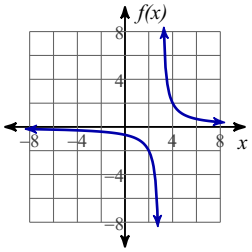

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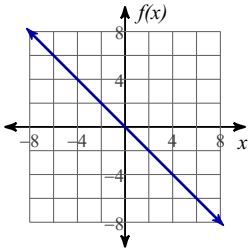

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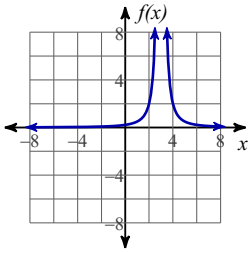

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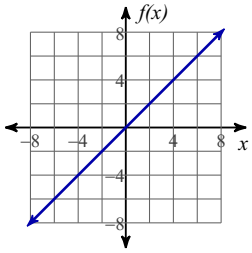

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