These are only a *few* sample problems to *help* you prepare for the exam. You should also be certain that you completely understand the WebWork assignments, Problems Sets, in-class work, and your class notes.

1. Let $f(x) = \dfrac{4x^3 + 5}{-2x^3 - 16}$

   (a) Where is f continuous? Give your answer in interval notation.

   (b) Does f have any vertical asymptotes? If so, where?

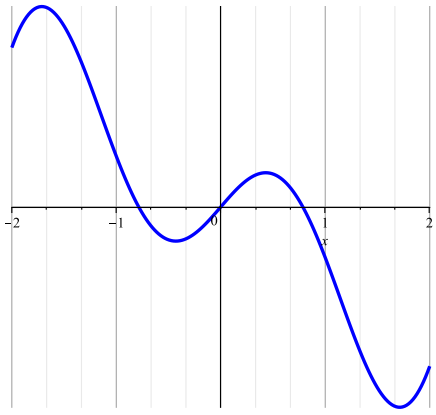
   (c) Does f have any horizontal asymptotes? If so, where?

2. The graph of $y = f(x)$ is shown to the right.

   (a) Sketch the graph of $y = f'(x)$.

   (b) Suppose $F(x)$ is a function where $F'(x) = f(x)$.

   Sketch the graph of $y = F(x)$.



Graph of y=f(x)

3. Identify the following as the graph of $y = A\sin(Bx) + C$. What are A, B, and C?

y = A sin(Bx) + C

4. Find values of A, B, C where $f(x) = A\cos(Bx) + C$ has period 4π and range $[-9, 1]$.

5. Find the exact solutions to the following equations.

   (a) $5\ln(x^2+2) = 15$

   (b) $e^{3x}\ln(x+2) - 7e^{3x} = 0$

6. Find all solutions to $2\cos(\theta)^2 - \cos(\theta) - 1 = 0$ that lie in the interval $[0, 2\pi)$.

7. Use the definition of the derivative to find $f'(3)$ if $f(x) = 5x^2 - 2x + 1$.

8. Find equation of the line tangent to $y = 8x^3 - \dfrac{12}{x^2} + \pi x$ at $x = 2$.