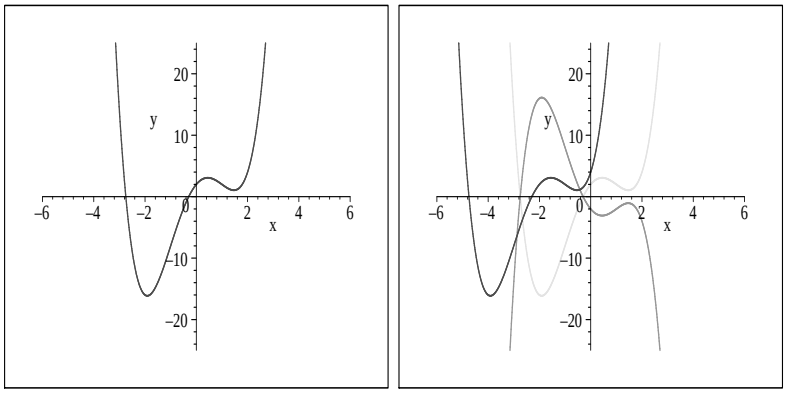
Solutions to Quiz 6

MATH 139-01 and -02
Thursday, September 18, 2003

Be sure to **show your work**. Unsupported answers receive no credit.

1. The graph of $y = f(x)$ is shown below. Sketch the graphs of $y = f(x+2)$ and $y = -f(x)$ on the same set of axes. Be sure to label which is which.



The original graph is shown on the left. In the second graph, all three are shown. The one that has been flipped is $y = -f(x)$ and the one that has been shifted left 2 units is $f(x+2)$.

2. Assume that f is a polynomial. What is the minimum degree f could have? How do you know?

Solution: Since f turns around 3 times, it must have degree at least 4.

3. The leading coefficient of f is either positive or negative. Which is it? How do you know?

Solution: The leading coefficient is positive since the graph goes to $+\infty$ as x goes to $-\infty$.

4. Let $f(x) = \ln(x)$ and $g(x) = x^2 - 5$. What is $f(g(x))$? $g(f(1))$?

Solution: $f(g(x)) = f(x^2 - 5) = \ln(x^2 - 5)$. $g(f(1)) = g(\ln(1)) = g(0) = -5$.