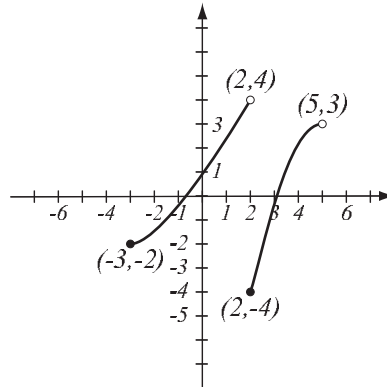**1.** (8pts) Use the graph of the function f at right to answer the following questions.

a) Find: $f(-3) =$ $f(2) =$

b) What is the domain of f?

c) What is the range of f?

d) What are the solutions
   of the equation $f(x) = 1$?

2. (10pts) Use your calculator to accurately sketch the graph of $y = x^3 - 5x - 9$.

a) Draw the graph on paper and indicate units on the axes.

b) Find all the $x-$ and $y-$intercepts (accuracy: 6 decimal points).

3. (5pts) Write the equation of the line that passes through points $(-1, 3)$ and $(7, 1)$.

4. (10pts) Find the equation of the line (in form $y = mx + b$) that is perpendicular to the line $3x + 2y = 8$ and passes through the y-intercept of the given line. Draw both lines.

5. (8pts) Draw the triangle with vertices $A = (-3, -1)$, $B = (6, 4)$ and $C = (1, 7)$. Use either slopes or the Pythagorean theorem to determine if this is a right triangle.

6. (9pts) Let $f(x) = \dfrac{x^2 + 2x}{\sqrt{x + 3}}$. Find the following (simplify where appropriate).

$f(1) =$ $\hspace{10cm}$ $f(-6) =$

$f(3t) =$ $\hspace{10cm}$ $f(w - 1) =$

7. (9pts) Find the domains of the functions below and write them using interval notation.

$f(x) = \dfrac{2x - 3}{x^2 - 1}$ $\hspace{6cm}$ $g(x) = \sqrt{10 - 4x}$

8. (7pts) Solve and write the solution in interval notation.

$3x - 4 < 5$ or $2x - 7 > 0$

9. (8pts) A circle has center $(-1, -3)$ and passes through the point $(2, 0)$.
a) Find the equation of the circle.
b) Draw the circle in the coordinate plane.

10. (12pts) Lauren has these options for a data plan for her cell phone:
A) $12 flat fee for the first GB, and then $4 per GB for usage beyond the first GB.
B) $3 flat fee plus $5.50 per GB.
Assuming Lauren always uses at least 1 GB of data, for which amount of data is plan B better?

11. (14pts) A truck starts driving eastward from Murray along state route 80. A car driving 11mph faster starts along the same route half an hour afterwards. After the car drives two and a half hours, it catches up with the truck.

a) How fast are the truck and the car?

b) How far from Murray are they when the car catches up with the truck?

Bonus (10pts) Bruce has a total of $3000 invested in two accounts, one bearing 3% and the other 4% interest. He notices that if he reversed the amounts invested in each account, he would have $7 more in interest over a year. How much is invested in each account?