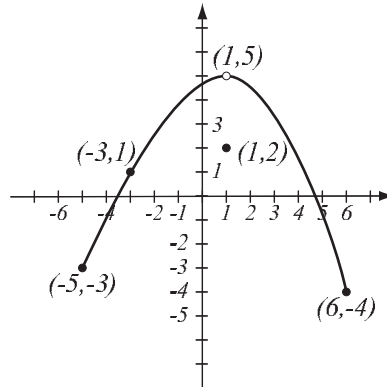


1. (8pts) Use the graph of the function f at right to answer the following questions.

- Find: $f(-3) =$ $f(1) =$
- What is the domain of f ?
- What is the range of f ?
- What are the solutions of the equation $f(x) = -2$?



2. (10pts) Use your calculator to accurately sketch the graph of $y = -x^3 + 3x^2 + 5x + 7$. Draw the graph here, and indicate units on the axes. Find all the x - and y -intercepts (accuracy: 6 decimal points).

3. (5pts) Write the equation of the line whose slope is -2 and whose x -intercept is 3.

4. (10pts) Find the equation of the line (in form $y = mx + b$) that passes through point $(1, -3)$ and is perpendicular to the line $3x + 2y = 4$. Draw both lines.

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

6. (9pts) Let $g(x) = \frac{x-1}{x^2-3}$. Find the following (simplify where appropriate).

$$g(-4) = \qquad \qquad \qquad g(\sqrt{3}) =$$

$$g(-2x) = \qquad \qquad \qquad g(a+2) =$$

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

$$f(x) = \frac{x-13}{x^2+3x-18}$$

$$g(x) = \sqrt{2x-5}$$

8. (5pts) Solve the inequality and write your solution in interval notation.

$$2 \leq 3x - 2 \leq 7$$

9. (10pts) A circle has center $(-2, 3)$ and passes through the point $(1, 2)$.

a) Find the equation of the circle.

b) Draw the circle in the coordinate plane.

10. (12pts) Frank, a salesman at a clothing store, can be paid under one of two plans:

A) salary of \$1,250 plus 10% of sales over \$1,000

B) salary of \$1,100 plus 20% of sales over \$2,000.

Assuming Frank always has sales of at least \$2,000, for which amount of sales is plan A better?

11. (14pts) A truck starts driving eastward from Murray along state route 80. A car driving 8mph faster starts along the same route half an hour afterwards. After the car drives three 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) Two containers with 40% and 65% solutions of orthophosphoric acid were mixed. The result was 5 liters of a 47% solution of orthophosphoric acid. How much acid solution was in each of the two containers?