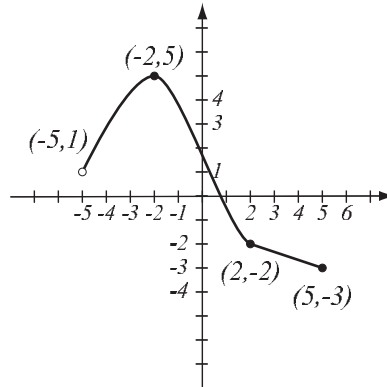


1. (8pts) Use the graph of the function f at right to answer the following questions.

- Find: $f(2) =$ $f(-5) =$
- What is the domain of f ?
- What is the range of f ?
- What are the solutions of the equation $f(x) = 3$?



2. (12pts) Use your calculator to accurately sketch the graph of $f(x) = x^3 - 3x^2 + 5$.

- Draw the graph on paper and indicate units on the axes.
- Find all the x - and y -intercepts (accuracy: 6 decimal points).
- Determine the range of the function in interval notation by looking at the graph.

3. (5pts) Find the equation of the line (in form $y = mx + b$) that passes through points $(1, 3)$ and $(3, -1)$. Draw the requested line.

4. (9pts) Find the equation of the line (in form $y = mx + b$) that is parallel to the line $3x + 4y = 20$ and contains the point $(4, -1)$. Draw both lines.

5. (9pts) In a coordinate system, draw the triangle with vertices $A = (-1, 1)$, $B = (6, 2)$ and $C = (0, 4)$.

a) Compute the slopes of all sides.

b) Use slopes to determine if the triangle is a right triangle.

6. (10pts) Let $f(x) = x^2 - 4x$. Find the following (simplify where appropriate).

$$f(1) =$$

$$f(\sqrt{7}) =$$

$$f(-a) =$$

$$f(z + 5) =$$

7. (6pts) Find the domain of the function below and write it using interval notation.

$$f(x) = \frac{\sqrt{3 - 2x}}{x + 4}$$

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

$$2x + 5 < 1 \text{ or } 3x - 5 > 8$$

9. (8pts) A circle is centered at $(-3, 2)$ and passes through the origin.

a) Find the equation of the circle.

b) Draw the circle in the coordinate plane.

10. (12pts) To solve your plumbing problem, you are considering two specialists.

Plumber Hank charges \$20 per visit plus \$60 per hour. Plumber Ricardo charges \$89 per visit, which includes an hour of work, plus \$55 per hour for hours after the first. Assuming your problem requires at least an hour of work time and one visit, for which number of hours is plumber Hank the better option? Solve as an inequality.

11. (14pts) Because she was afraid of being late, Emma drove to work at 64 mph. She drove home at 56 mph, so it took her 6 minutes longer.

a) How long did it take Emma to drive to work?

b) How far is her workplace from home?

Bonus (10pts) Bill, Rudy and Mike go out for pizza and decide to split the \$35.10 bill based on how much each of them ate. Rudy ate half the amount Mike did, and Bill ate four thirds the amount Rudy ate. How much did each pay?