

COLLEGE ALGEBRA - MAT 140

FALL 2008 - EXAM 2

Name : _____

TO RECEIVE FULL CREDIT YOU MUST SHOW YOUR WORK. No notes or books are allowed.

No. 1. (10 points) State whether each statement is **True** or **False** as stated. Provide a clear reason for your answer.

- i) A function can have more than one y-intercept.
- ii) The graph of a function $y = f(x)$ always crosses the y-axis.
- iii) The y-intercept of the graph of the function $y = f(x)$, whose domain is all real numbers, is $f(0)$.
- iv) The domain of $(f \cdot g)(x)$ consists of the numbers x that are in the domains of both f and g .
- v) The average rate of change of a linear function $f(x) = mx + b$ is the constant m .

No. 2. (6 points) Find the domain of the function $f(x) = \frac{x}{\sqrt{x-4}}$.

No. 3. (10 points) Determine whether the graph is of a function or not.

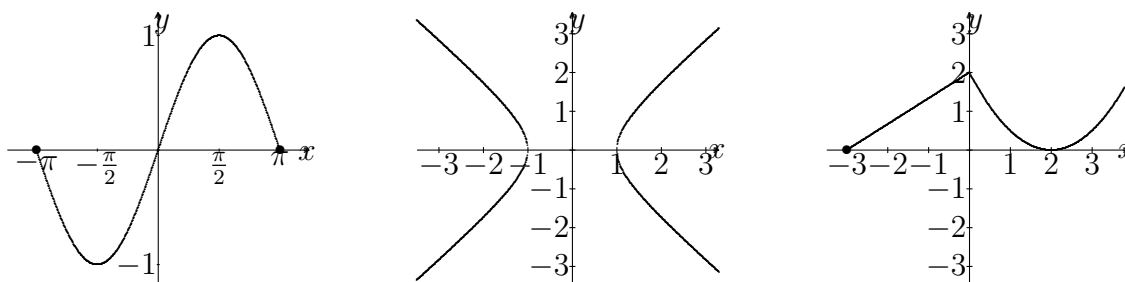


Figure 1:

No. 4. (16 points) Use the given graph of the function f , Figure 2, to answer parts (a)-(k).

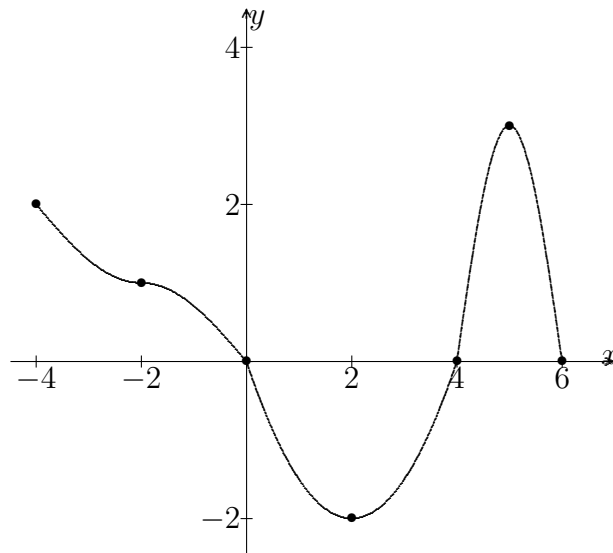


Figure 2:

- Find $f(0)$ and $f(6)$
- Is $f(3)$ positive or negative?
- For what numbers x is $f(x) = 0$.
- For what numbers x is $f(x) < 0$.
- What is the domain of f ?
- What is the range of f ?
- What are the x-intercepts?
- What is the y-intercept?
- How often does the line $y = 1$ intersect the graph?
- How often does the line $x = -2$ intersect the graph?
- For what value of x does $f(x) = 3$?

No. 5. (16 points) Consider the function $f(x) = \frac{2x}{x-2}$.

a) Is the point $(\frac{1}{2}, -\frac{2}{3})$ on the graph of f ?

b) If $x = 4$, what is $f(x)$? What point is on the graph of f ?

c) If $f(x) = 1$, what is x ? What point(s) are on the graph of f ?

d) What is the domain of f ?

e) List the x-intercepts, if any, of the graph of f .

f) List the y-intercept, if there is one, of the graph of f .

No. 8. (10 points) For the data given in Table 1,

x	3	4	5	6	7	8	9
y	4	6	7	10	12	14	16

Table 1:

- Draw a scatter diagram on Figure 3.
- Use a graphing utility to find the line of best fit.
- Graph the line of best fit on the scatter diagram. (Free hand drawing not acceptable!)

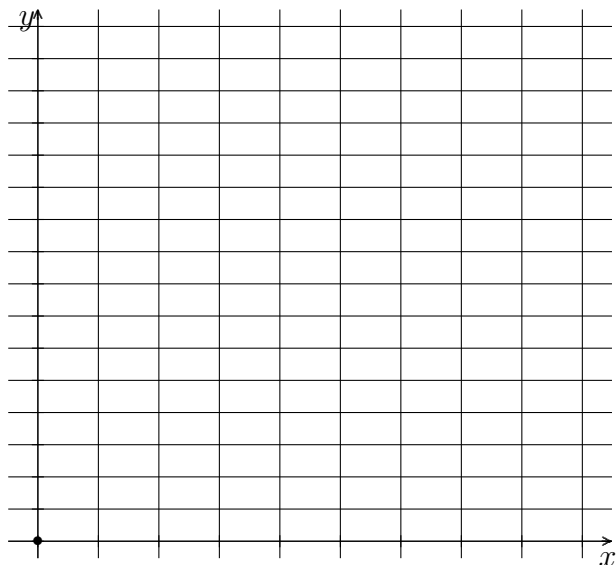


Figure 3:

No. 9. (12 points) Match each graph to its function.

- A.** Square root function **B.** Cube function **C.** Reciprocal function
D. Absolute value function **E.** Square function **F.** Linear function

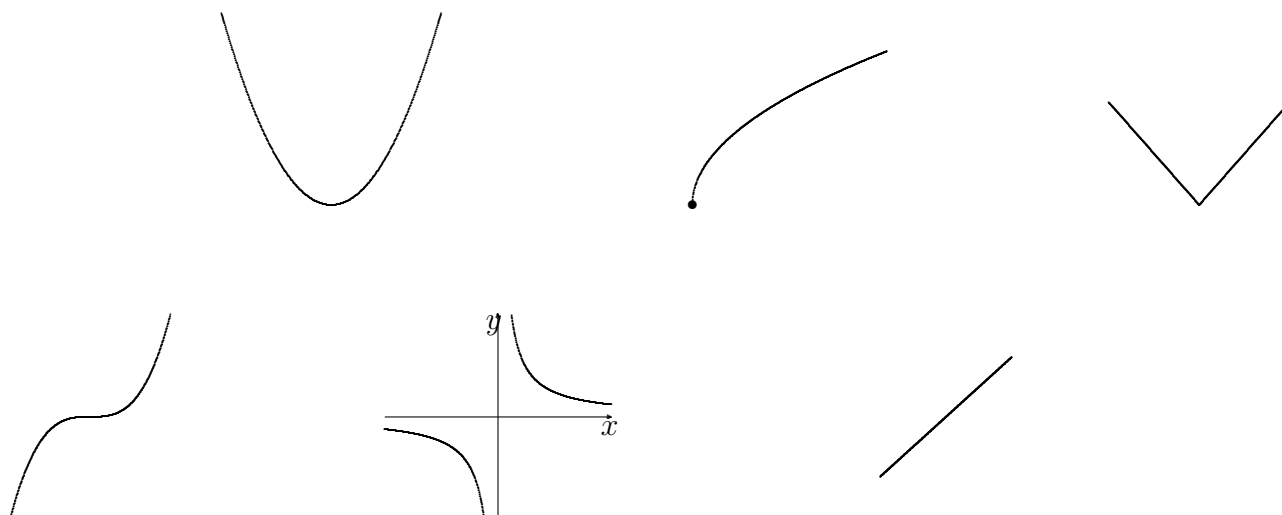


Figure 4: