

Math 114 (Algebra & Trigonometry)

Lec. 2, Fall Sem. 2001-02

Prof. R.A. Brualdi

Exam 1: Oct. 5, 2001

NAME:

Be Sure to Show your WORK

Graphing & Programmable Calculators Not Allowed or Needed

Problem	Points Received
1.(20 points)	
2.(20 points)	
3.(20 points)	
4.(25 points)	
5.(15 points)	
TOTAL (100 points)	

1. Write in simplest form with no negative exponents:

(a) $\frac{x^{-1}-(x+1)^{-1}}{x^{-1}+(x+1)^{-1}}$

ANSWER:

(b) $\left(\frac{ab^2c^{-3}}{2a^3b^{-4}}\right)^{-2}$

ANSWER:

2. Solve (i.e. find all real solutions):

(a) $x^{3/2} - 4x - 32x^{1/2} = 0$

ANSWER:

(b) $\frac{2x+5}{x+1} \leq 1$

ANSWER:

3. Solve the following problems:

(a) Determine the domain of the function $y = \sqrt{8 - x} + \sqrt{x^2 - 4}$. Give your answer both algebraically and graphically on a number line.

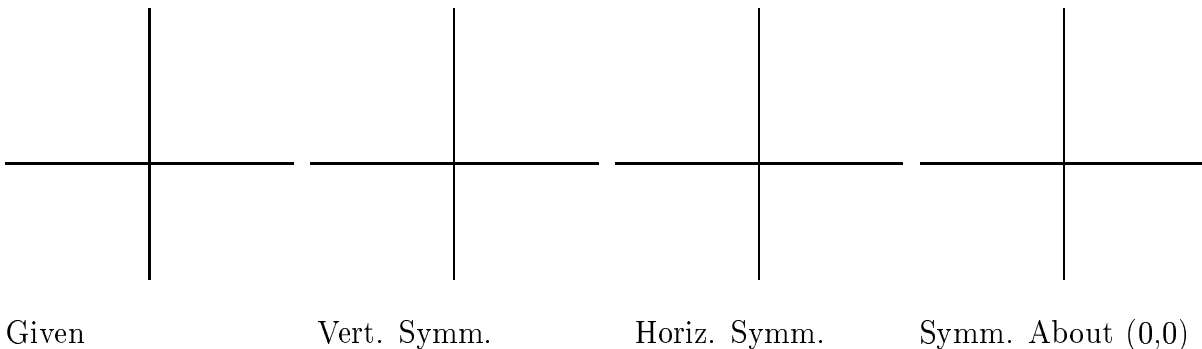
ANSWER:

(b) Find the equation of the line tangent to the circle $(x - 2)^2 + (y + 3)^2 = 20$ at the point $(4, -7)$.

ANSWER:

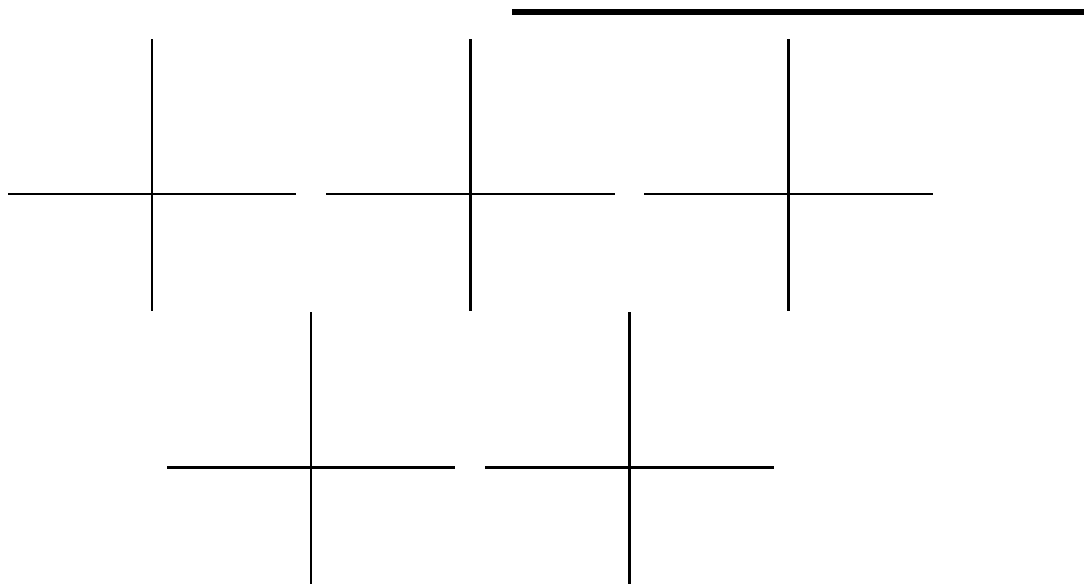
4. Solve the following problems:

(a) Part of the graph of an equation is shown. Complete the graph if it has the indicated symmetry.



(b) Write the quadratic $y = -3x^2 - 24x - 43$ in standard form and show in **FOUR** steps how its graph is obtained from the graph of $y = x^2$.

ANSWER (Stand. Form)



Answer (Graphs)

5. Solve the following problems:

(a) A thief on a bicycle leaves the scene of a crime going 14 mph. Ten minutes ($1/6$ th of an hour) later, a cop riding at 16 mph on a bicycle pursues the thief. How long does it take for the cop to catch the thief?

ANSWER:

(b) Let $f(x) = \frac{1}{x+3}$ and $g(x) = \sqrt{x+1}$. Determine the function $g \circ f$.

ANSWER $g \circ f$:
