Evaluation

**Homework:** Study for Final

**EXAM:** Friday 05/05/06
10:15 AM - 12:15 PM
Room PH 109
1. Reducing algebraic expression with negative exponents
2. Adding rational expressions
3. Factoring quantities with negative exponents
4. Equation of a line passing through two points
5. Functional evaluation
6. Composition of functions
7. Find Inverse of functions

8. Domain and Range of functions

9. Completing the square

10. Identifying graphs

11. Solving rational equations

12. Solving equations with fractional exponents

13. Solving equations with radicals
14. Solving equations with absolute values

15. Solving inequalities

16. Graphing solutions of inequalities

17. Solving rational inequalities

18. Complex number arithmetic
18. Complex number arithmetic

19. Determine if function is odd, even or neither

20. Synthetic division

21. Finding zeros of a function

22. Given a graph, identify the function

23. Asymptotes for rational functions

24. Solutions for systems of equations

25. Evaluating summations
26. Coefficient of a term in a binomial expansion

27. Graphs of Conic Sections

28. Application Problems
4. Complete the square, rewrite in standard form, identify the conic section, give applicable information and graph:

$$9x^2 - y^2 - 36x - 6y + 18 = 0$$

Completed square:
Identify which Conic Section:
Applicable Information:
Vertices:
Center:
Asymptotes:
\( f(x) = 2x^2 + 8x + 7 \)

\( f(x) = 2 \left( x^2 + 4x + 4 \right) + 7 - 8 \)

\( f(x) = 2 (x+2)^2 - 1 \)

Vertex: \((-2, -1)\)
Completed square:
Identify which Conic Section:
Applicable Information:
Vertices:
Center: (1, -1)
Asymptotes:

\[
(y + 1) = \frac{2}{3}(x - 1) \Rightarrow y = \frac{2}{3}x - \frac{5}{3}
\]

\[
y + 1 = -\frac{2}{3}(x - 1) \Rightarrow y = -\frac{2}{3}x + \frac{1}{3}
\]
The equation of the circle is given by $9 + y^2 = 10$, which simplifies to $y^2 = 1$ and $y = \pm 1$.

The parabola is given by $x^2 + y^2 = 10$.

The hyperbola is given by $2x^2 - y^2 = 17$.

The values of $x$ are found by solving the equations:
- $3x^2 = 27$ leads to $x = 9$.
- $x = \pm 3$.

The points $(3,1), (3,-1), (-3,1), (-3,-1)$ are plotted on the diagram.
\[ x^2 + y^2 = 25 = 0 \]
\[ 2x - y = -5 \]
\[ x^2 + (2x+5)^2 - 25 = 0 \]
\[ x^2 + 4x^2 + 20x + 25 - 25 = 0 \]
\[ 5x^2 + 20x = 0 \]
\[ 5x(x+4) = 0 \]
\[ 5x = 0 \quad \text{or} \quad x+4 = 0 \]
\[ x = 0 \quad x = -4 \]
\[ y = 2x + 5 \]
\[ y = 5 \]
\[ x = -4 \]
\[ y = -8 + 5 = -3 \]
\[ x = 0, \quad y = 25 - x^2, \quad y = \sqrt{25 - x^2} \]
\[ x + y - 5z = 3 \]
\[ x - 2z = 1 \]
\[ 2x - y - 2z = 0 \]
\[ 3x^{\frac{2}{3}} + 2x = 5 \]
\[ 2x^{\frac{2}{3}} + 3x^{\frac{1}{3}} - 5 = 0 \]
\[ (2x^{\frac{1}{3}} + 5)(x^{\frac{1}{3}} - 1) = 0 \]
\[ 2x^{\frac{1}{3}} + 5 = 0 \quad x^{\frac{1}{3}} = 1 \]
\[ x^{\frac{1}{3}} = \frac{-5}{2} \Rightarrow x = \frac{-125}{8} \Rightarrow x - \text{intercept of equation} \]
\[ \frac{5}{Z^1_{(i+1)^{-1}}} \]

\[
\begin{array}{c|cc}
\cdot & 2^{-1} & 1^{-1} \\
\hline
1 & 2^{-1} & 1^{-1} \\
2 & 3^{-1} & 2^{-1} \\
3 & 4^{-1} & 3^{-1} \\
4 & 5^{-1} & 4^{-1} \\
5 & 6^{-1} & 5^{-1} \\
6 & 7^{-1} & 6^{-1}
\end{array}
\]

\[ m \neq \text{il} \text{- A} \text{- w} \text{- m} \]
$\theta = \frac{1}{2} \pi$

$$g(x) = x^4 - x^3 - 2x^2$$

$$x^2(x - x - 2) = 0$$

$$x^2(x - 2)(x + 1) = 0$$

$$x = 0 \quad x - 2 = 0 \quad x + 1 = 0$$

$$x = 0 \quad x = 2 \quad x = -1$$

Multiplicity 2
\( \sqrt{x+3} = 4 - 3 \quad \Rightarrow x = 3 \quad \text{solution one} \)

\[
\left( \sqrt{5x+4} \right)^2 = \left( 4 - \sqrt{2x+3} \right)^2
\]

\[
15 \sqrt{2x+3} = 16 - 8 \sqrt{2x+3} + 2x + 3
\]

\[
15 \sqrt{2x+3} = 19 + 2x - 8 \sqrt{2x+3}
\]

\[
\frac{15 \sqrt{2x+3} - 19}{-19} = \frac{2x - 8 \sqrt{2x+3}}{-19}
\]

\[
15 \sqrt{2x+3} = 2x - 8 \sqrt{2x+3}
\]

\[
-2x = -2x
\]

\[
(13x - 15)^2 = 64(2x + 3)
\]

\[
169x^2 - 390x + 225 = 64(2x + 3)
\]

\[
169x^2 - 390x + 225 = 128x + 192
\]

\[
-128x - 192
\]

\[
169x^2 - 518x + 33 = 0
\]

\[
(169x - 11)(x - 3) = 0
\]

\[
169x - 11 = 0 \quad x = \frac{11}{169}
\]

\[
x = 3
\]

\[
1 - 3 = -2
\]

\[
-507 = -507
\]

\[
-518 = -518
\]
\[ g(x) = 7 - 4x + x^2 \]

\[ g(x+h) = 7 - 4(x+h) + (x+h)^2 \]

\[ g(x) = -7 + 4x - x^2 \]

\[ \frac{g(x+h) - g(x)}{h} = -4 + 2x + h \]

\[ \lim_{h \to 0} \frac{g(x+h) - g(x)}{h} = -4 + 2x \]

\[ DQ = \frac{g(x+h) - g(x)}{h} \]

\[ DQ = \frac{g(x+h) - g(x)}{h} \]
\[ f(x) = \lfloor x \rfloor \]
Range: $y \geq 0$ 

$$f(x) = \sqrt{x - 2}$$

Domain: $(-\infty, 2) \cup (2, \infty)$

Domain: $[2, \infty)$

Range: $[0, \infty)$
Volume: 1500

\[ V = x(24-2x)(24-2x) \]
\[ 1500 = 4x(12-x)^2 \]
\[
\chi \left(1 - 2\chi\right)^{-\frac{3}{2}} + (1 - 2\chi)^{-\frac{1}{2}} - \left(\frac{3}{2}\right)
\]

\[
(1 - 2\chi)^{-\frac{3}{2}} \left[ \sqrt{\chi} + (1 - 2\chi) \right]
\]

\[
\implies (1 - 2\chi)^{-\frac{3}{2}} (-\chi + 1)
\]

\[
\implies \frac{(1 - \chi)}{(1 - 2\chi)^{3/2}}
\]
\[ 4x^2 - 9y^2 - 18y - 8x + 41 = 0 \]

\[
\begin{align*}
4(x^2 - 2x + 1) - 9(y^2 + 2y + 1) &= 41 \\
4(x - 1)^2 - 9(y + 1)^2 &= 36 \\
\frac{(x - 1)^2}{9} - \frac{(y + 1)^2}{4} &= 1
\end{align*}
\]
Completed square:
Identify which Conic Section:
Applicable Information:
Vertices:
Center:
Asymptotes:
11. Classify the graph of $3x^2 + 3y^2 - 6x + 18y + 10 = 0$.
Put in recognizable form.
Give the vertices, asymptotes, center, intercepts where applicable.