## Final Exam Practice

Math 135: Intermediate Algebra
January 82008

## Useful Formulas

$$
\begin{aligned}
\text { midpoint } & =\left(\frac{x_{1}+x_{2}}{2}, \frac{y_{1}+y_{2}}{2}\right) \\
d & =\sqrt{\left(x_{2}-x_{1}\right)^{2}+\left(y_{2}-y_{1}\right)^{2}} \\
m & =\frac{y_{2}-y_{1}}{x_{2}-x_{1}} \\
y & =m x+b \\
y-y_{1} & =m\left(x-x_{1}\right) \\
m_{\text {perp }} & =-\frac{1}{m} \\
a^{3}+b^{3} & =(a+b)\left(a^{2}-a b+b^{2}\right) \\
a^{3}-b^{3} & =(a-b)\left(a^{2}+a b+b^{2}\right) \\
x & =\frac{-b \pm \sqrt{b^{2}-4 a c}}{2 a} \\
\text { Distance } & =\text { Rate } \times \text { Time } \\
A^{2}+B^{2} & =C^{2}
\end{aligned}
$$

Area of rectangle $=$ Length $\times$ Width

$$
\text { Area of triangle }=\frac{1}{2} \times \text { Base } \times \text { Height }
$$

$$
\text { Circumference of a circle }=2 \pi \times \text { Radius }
$$

Area of circle $=\pi \times$ Radius $^{2}$
Surface area of sphere $=4 \pi \times$ Radius $^{2}$
Vertex of a parabola : $\quad x=-\frac{b}{2 a}$

## Problems

1. A goldsmith is making a 16 gram ring from a combination of gold and silver. Gold costs $\$ 50$ per gram, and silver is $\$ 10$ per gram. The goldsmith wants the cost of materials for the ring to be between $\$ 400$ and $\$ 510$. What amount of gold and silver can he use in the ring?
2. Graph the line $x+2 y=4$, and find its slope and intercepts.
3. Factor: $3 x^{2}-13 x-10$
4. Two data entry clerks working together take 4 hours to type a database into a computer system. Working alone, it would take the faster clerk 6 hours less than the slower one. How long would it take each clerk to enter the databse by himself?
5. Divide: $(5-3 i) \div(2+4 i)$
6. Solve: $x^{2}-4 x+13=0$
7. Graph $y=\frac{1}{2} x^{2}-2 x-6$, and find its vertex and its zeros.
8. A plane flies from New York to Paris and back. The trip east, with the wind, takes 7 hours, and the trip back, against the wind, takes 8 hours. If the two cities are 4,480 miles apart, find the speed of the plane in still air and the speed of the wind.
