MAT 104 Quiz 14

Monday, October 18, 2004

1. Factor out the greatest common factor from

$$12x^2 - 2x + 8$$

The gcd of the terms is 2, so this expression can be written as

$$2(6x^2 - x + 4)$$

2. Factor out the greatest common factor from

$$3x^4y + 9x^3y^2 + 12x^2y^2$$

The gcd of the terms is $3x^2y$, so this expression can be written as

$$3x^2y(x^2 + 3xy + 4y)$$

3. Factor by grouping

$$2z^3 + 3z^2 - 6z - 9$$

Group the first two terms together, and the last two terms together, and pull out the gcd of each pair.

$$\begin{aligned} 2z^3 + 3z^2 - 6z - 9 &= (2z^3 + 3z^2) + (-6z - 9) \\ &= z^2(2z + 3) - 3(2z + 3) \end{aligned}$$

Now we have a two term expression where the first term is $z^2(2z + 3)$ and the second term is $-3(2z + 3)$. They both have a common factor of $(2z + 3)$, which can be pulled out. So

$$z^2(2z + 3) - 3(2z + 3) = (2z + 3)(z^2 - 3)$$