MATH 120 EXAM #1 KEY (SPRING 2008)

1 $3(-4)-7(5)+(-3)^2 = -12-35+9 = -38$

2 $|3(-7)-2(-3)| = |-21+6| = |-15| = 15$

3a $x^2-5x+1-10x^2-5x+20 = -9x^2-10x+21$

3b $2x^2-11x+12$

3c $(m^2-6m+9)(m-3) = m^3-6m^2+9m-3m^2+18m-27$
$= m^3-9m^2+27m-27$

3d $9q^2+15q+3pq+15q+25+5p-3pq-5p-p^2$
$= 9q^2+30q+25-p^2$

4

$$x-4\overline{)\,4x^3-13x^2-4x+2}\quad\Big\}\ 4x^2+3x+8+\frac{34}{x-4}$$

$4x^2+3x+8$

$4x^3-16x^2$

$3x^2-4x$

$3x^2-12x$

$8x+2$

$8x-32$

34

5a $h^2j(5+hj)$

5b $2m(m-p)+n(m-p) = (m-p)(2m+n)$

5c $(3m+2)(m+4)$

5d $3x^3(6x^2+5xz-25z^2)$
$3x^3(3x-5z)(2x+5z)$

5e $(3w)^3-(2z^2)^3 = (3w-2z^2)\left[(3w)^2+(3w)(2z^2)+(2z^2)^2\right]$
$= (3w-2z^2)(9w^2+6wz^2+4z^4)$

6a $\frac{1}{3r}\cdot\frac{3}{4r^2} = \frac{3}{12r^3} = \frac{1}{4r^3}$

6b $\frac{2(x+4)}{(x+3)(x+4)} - \frac{1}{(x+3)(x+4)} = \frac{2x+7}{(x+3)(x+4)}$

6c $\frac{4(a+3)}{2(a-5)}\cdot\frac{(a-5)(a+4)}{(a-3)(a+3)} = \frac{2(a+4)}{a-3} = \frac{2a+8}{a-3}$

7 $\frac{h+g}{gh-2}$

8 $\frac{u^{1/3}}{u^{4/3}u^{-1}} = \frac{u^{1/3}}{u^{1/3}} = 1$

9a $ab\sqrt[5]{ab^2}$

9b $\sqrt[3]{c^2}$

9c $\frac{\sqrt{2}}{\sqrt{3y}} = \frac{\sqrt{2}\cdot\sqrt{3y}}{\sqrt{3y}\cdot\sqrt{3y}} = \frac{\sqrt{6y}}{3y}$

9d $2\sqrt[3]{3u}+8\sqrt[3]{3u}-3\sqrt[3]{3u} = 7\sqrt[3]{3u}$

10 $\frac{k}{3-\sqrt{k}}\cdot\frac{3+\sqrt{k}}{3+\sqrt{k}} = \frac{3k+k\sqrt{k}}{9-k}$