COLLEGE ALGEBRA

NAME: Holly Gasper

GPS # 36 **4.3** **SOLUTION OF POLYNOMIAL EQUATIONS II** Class Time: T/Th 11:30 Date: 3-27-08

Useful Guidelines:

* Square Root and Cube Root: The cube root function is defined for all inputs, whereas the square root function is defined only for nonnegative inputs.
* Square Root Property: If k is a nonnegative numbers and $x^2 = k$, then $x = \pm\sqrt{k}$. (square)
* Solve Equations with Cube Roots: The solution to the equation $x^3 = k$ is $x = \sqrt[3]{k}$. (cubic)
* Power function: $f(x) = x^p$, where p is a rational number.
* Root function: $f(x) = \sqrt[n]{x}$, where $n \geq 2$.

Good work M.

1. Use the square root property to solve each equation and give the solution set.

a) $x^2 = 49$

$x = \pm\sqrt{49}$

$x = \pm 7$

Solution set $\{-7, 7\}$

b) $x^2 - 8 = 0$

$+8 \quad +8$

$x^2 = 8$

$x = \pm\sqrt{8}$

$x = \pm 2\sqrt{2}$

Solution set $\{x \mid x = \pm 2\sqrt{2}\}$

c) $(x-4)^2 = 25$

$(x-4) = \pm 5$

$+4 \quad +4$

$x = -1, 9$

Solution set $\{-1, 9\}$

d) $(2x-5)^2 = 12$

$2x - 5 = \pm 2\sqrt{3}$

$+5 \quad +5$

$\frac{2x}{2} = \frac{5 \pm 2\sqrt{3}}{2}$

$x = 2.5 \pm \sqrt{3}$

Solution set $\{x \mid x = 2.5 \pm \sqrt{3}\}$

2. Use the cubic roots to solve each equation and give the solution set.

a) $2x^3 - 250 = 0$

$+250 \quad +250$

$\frac{2x^3}{2} = \frac{250}{2}$

$x^3 = 125$

$x = \sqrt[3]{125}$

$x = 5$

Solution set $\{x \mid x = 5\}$

b) $(y-1)^3 = 8$

$y - 1 = \sqrt[3]{8}$

$y - 1 = 2$

$+1 \quad +1$

$y = 3$

Solution set $\{y \mid y = 3\}$

3. Solve the polynomial equation by using the root method and give the solution set.

a) $x^3 - 60 = 4$

$+60 \quad +60$

$x^3 = 64$

$x = \sqrt[3]{64}$

$x = 4$

Solution set $\{x \mid x = 4\}$

b) $6x^4 - 24x^2 = 0$

$6x^2(x^2 - 4) = 0$

$6x^2 = 0 \qquad x^2 - 4 = 0$

$x = 0 \qquad (x-2)(x+2) = 0$

$x = \pm 2$

Solution set $\{-2, 0, 2\}$