INTERMEDIATE ALGEBRA

GPS # 23 **5.6 POLYNOMIAL EQUATIONS** **NAME:** Parul Patel

Useful Guidelines:

To Solve a Quadratic Equation, $2x^2+x-3=0$

1. Factor the polynomial: $(2x+3)(x-1)=0$
2. Set each variable factor equal to zero: $(2x+3)=0$ or $(x-1)=0$
4. Find the solution(s): $x=-\frac{3}{2}$ or $x=1 \Rightarrow$ the solution set is $\{-\frac{3}{2},1\}$

Zero-Factor Property:

If two numbers have a product of **0**, then at least one of the numbers must be **0**.

Solve the following equations:

1. a) $x^2+4x-5=0$

$(x+5)(x-1)=0$

$5x - x = 4x$

$x+5=0$ or $x-1=0$

$x=-5$ $x=1$

Sol. set $\{-5,1\}$

b) $3p^2-11p+6=0$

$(3p-2)(p-3)=0$

$-2p - 9p = -11p$

$3p-2=0$ or $p-3=0$

$p=\frac{2}{3}$ $p=3$

Sol. set $\{\frac{2}{3},3\}$

2. a) $5z^2-12z=-7$

$5z^2-12z+7=0$

$(5z-7)(z-1)=0$

$-7z - 5z = -12z$

$5z-7=0$ or $z-1=0$

$z=\frac{7}{5}$ $z=1$

Sol. set $\{\frac{7}{5},1\}$

b) $7k^2-23k=-6$

$7k^2-23k+6=0$

$(7k-2)(k-3)=0$

$-2k - 21k = -23k$

$7k-2=0$ or $k-3=0$

$k=\frac{2}{7}$ $k=3$

Sol. set $\{\frac{2}{7},3\}$

3. a) $4x^3+4x^2-8x=0$

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

$4x(x+2)(x-1)=0$

$4x=0$ $x+2=0$ $x-1=0$

$x=0$ $x=-2$ $x=1$

Sol. set $\{-2,0,1\}$

b) $y^3-2y^2-4y+8=0$

[Factor by grouping]

$y^2(y-2)-4(y-2)=0$

$(y-2)(y^2-4)$

$(y-2)(y-2)(y+2)$

$y-2=0$ $y+2=0$

$y=2$ $y=-2$

Sol. set $\{-2,2\}$