**Unit 6 Homework**

**6.1.1(1-2) HW #1**

Find the length of $\overbar{AB}$ and the coordinates of the midpoint of $\overbar{AB}$.

1) $A\left(1,0\right), B(7,8)$ 2) $A\left(3,3\right),B(15,12)$

**6.1.1(3) HW #2**

Classify each polynomial function as linear, quadratic, cubic, quartic, or quintic. Also, give its leading term, leading coefficient, and degree.

1) $f\left(x\right)=4+2x+6x^{2}$ 2) $g\left(x\right)=5x^{4}-x^{2}$

3) $h\left(x\right)=8-3x^{3}$ 4) $p\left(x\right)=x^{4}+8x^{2}-2-3x^{5}$

**6.1.1(4) HW #3**

Graph each equation. Label the origin and the x- and y-intercepts as L, M, and N, respectively. Find the area of $∆LMN$.

1) $3x-2y=6$ 2) $4x+3y=24$

**6.1.2 HW #4**

Use the given values to find an equation of the form $f\left(x\right)=ax^{2}+bx+c$.

1) $f\left(0\right)=5, f\left(1\right)=10, f\left(2\right)=19$ 2) $f\left(1\right)=4, f\left(2\right)=12, f\left(4\right)=46$

3) $f\left(0\right)=6, f\left(2\right)=18, f\left(4\right)=34$ 4) $f\left(1\right)=10.5, f\left(2\right)=13, f\left(5\right)=32.5$

**Method of Undetermined Coefficients HW #5**

Find the slope of the line joining the points whose coordinates are given.

1) (4, 2), (9, 5) 2) (0, 4), (12, 0) 3) (-4, -2), (2, -6)

4) (-2, 6), (2, -2) 5) (8, 5), (-7, 5) 6) (-3, 8), (-3, -2)

**6.1.3(1-2) HW #6**

Find the slope and y-intercept of the line whose equation is given.

1) $y=3x+5$ 2) $y=4-5x$ 3) $4x-2y=8$

4) $3x+9y=7$ 5) $3y=11x$ 6) $y=5$

**6.1.3(3) HW #7**

Solve by using the quadratic formula. Give your answers in simplest radical form. Give both real and imaginary roots.

1) $5x^{2}+2x-1=0$ 2) $4x^{2}-4x-17=0$

**6.1.3(4) HW #8**

1) The leading coefficient of a cubic polynomial P is 2, and the coefficient of the linear term is -5. If P(0) = 7 and P(2) = 21, find P(3).

**6.1.3(5) HW #9**

Sketch each parabola. Label the vertex, axis of symmetry, and the x- and y-intercepts.

1) $y=x^{2}-6x$ 2) $y=x^{2}-6x+9$ 3) $y=x^{2}-6x+10$

4) $y=(x+5)(x+3)$ 5) $y=(x-4)(x+2)$ 6) $y=9-x^{2}$

**6.2.2(1-3) HW #10**

Find an equation of the quadratic function described.

1) Its graph is a parabola with x-intercepts 2 and -1, and y-intercept 6.

2) The function f has zeros 5 and 1 and f(0) = 1.

3) Its graph is a parabola with vertex (4, 8) and passing through the origin.

**6.2.2(4) HW #11**

Find an equation of the quadratic function described.

1) The minimum value of h is h(3) = -5, and h(1) = 2.

2) The maximum value of g is g(-1) = 6, and g(-3) = 4.

**6.2.2(5) HW #12**

Find the remainder when $x^{5}-2x^{3}+x^{2}-4$ is divided by:

1) $x-1$ 2) $x+1$ 3) $x-2$ 4) $x+2$

Find the remainder when $x^{3}-3x^{2}+5$ is divided by:

1) $x-2$ 2) $x+2$ 3) $x-3$ 4) $x+3$

**6.2.2(6) HW #13**

Find the quotient and remainder when dividing the following:

1) $x^{5}+x^{3}+x$ by $x-3$ 2) $x^{2}-3x^{4}$ by $x+2$

3) $3x^{4}-2x^{3}+5x^{2}+x+1$ by $x^{2}+2x$ 4) $x^{5}+3x^{2}+4$ by $x^{2}+2x+1$

**6.2.2(7) HW #14**

Given a polynomial equation and one or more roots, find the remaining roots.

1) $2x^{3}-5x^{2}-4x+3=0$; root: $x=3$ 2) $6x^{3}+11x^{2}-4x-4=0$; root: $x=-2$

**6.2.3(5) HW #15**

1) Which of the following are factors of $h\left(x\right)=x^{3}-5x^{2}+3x+9?$

 a. $x-1 $ b. $x+3$ c. $x-3$

2) Which of the following are factors of $m\left(x\right)=x^{4}-3x^{3}+5x+2?$

 a. $x+2$ b. $x-2$ c. $x+4$

**6.2.3(6-7) HW #16**

Solve by using the quadratic formula. Give answers in simplest radical form.

1. $3t^{2}=12t-15$ 2) $5u^{2}+2=5u$ 3) $\frac{4}{v}=\frac{v-6}{v-4} $ 4) $\frac{4}{z}=\frac{3z}{z-3}$

**6.2.3(8) HW #17**

Simplify.

1. $\left(4-3i\right)+(-6+8i)$ 2) $\left(7-8i\right)-(6+2i)$ 3) $4\left(3+5i\right)-2(2-6i)$
2. $\frac{1}{6}\left(7-2i\right)+\frac{2}{3}(5-5i)$ 5) $(6-i)(6+i)$ 6) $(7+3i)(7-3i)$
3. $(8+3i)(2-5i)$

**Complex Number TWIZ HW #18**

Simplify.

1. $\sqrt{-4}+\sqrt{-16}+\sqrt{-1}$ 2) $\sqrt{-49}+\sqrt{-9}+\sqrt{-36}$ 3) $\sqrt{-1}\sqrt{-9}$
2. $\sqrt{-2}\sqrt{-5}$ 5) $\frac{\sqrt{-12}}{\sqrt{-3}}$ 6) $\frac{\sqrt{-25}}{\sqrt{-50}}$

**6.3.2(2) HW #19**

Given the polynomial and roots provided, find the remaining roots.

1. $2x^{4}-9x^{3}+2x^{2}+9x-4=0$; roots: $x=-1, x=1$
2. $4x^{4}-4x^{3}-25x^{2}+x+6=0$; roots: $x=-2, x=3$

**6.3.2(3-4) HW #20**

For each of the following, give the x-intercepts and the equation for vertical or horizontal asymptotes (if any).

1. $y=\frac{x-2}{\left(x-1\right)\left(x-3\right)}$ 2) $y=\frac{x}{x^{2}-4}$

**6.3.2(5-6) HW #21**

For each of the following, give the x-intercepts and the equation for vertical or horizontal asymptotes (if any).

1. $y=\frac{x^{2}-9}{x^{2}+9}$ 2) $y=\frac{2x^{2}}{x^{2}-6}$

**Unit 6 Review HW #22**

Sketch the graph of the following function. Show vertical/horizontal asymptotes and x-intercepts.

1. $y=\frac{3x^{2}}{x^{2}-3x}$