Math 120 HW #1

Due: Sept. 6

Chapter 0.4

Perform the indicated operations and simplify.

4. $(\sqrt{x} + 2\sqrt{x}) + (\sqrt{x} + 3\sqrt{x})$
10. $4(2z - w) - 3(w - 2z)$
13. $5(x^2 - y^2) + x(y - 3x) - 4y(2x + 7y)$
15. $2(3(3(x^2 + 2) - 2(x^2 - 5)))$
20. $(u + 2)(u + 5)$
31. $(2x - 1)(2s + 1)$
34. $(x + 1)(x^2 + x + 3)$
39. $(x + y + 2)(3x + 2y - 4)$
44. $(x + 2y)^3$
47.
$$\frac{6x^5 + 4x^3 - 1}{2x^2}$$

53.
$$\frac{x^3}{x + 2}$$

Chapter 0.7

Determine by substitution if the provided values are solutions to the equation.

2. $12 - 7x = -x^2, \; x \in \{1, 0\}$
3. $z + 3(z - 4) = 5, \; x \in \{17/4, 4\}$

Solve the following equations.

20. $2x - 4x = -5$
23. $5x - 3 = 9$
29.
$$\frac{x}{5} = 2x - 6$$

30.
$$\frac{5y}{7} - \frac{6}{7} = 2 - 4y$$

37.
$$\frac{2y - 3}{4} = \frac{6y + 7}{3}$$

45.
$$\frac{4}{3}(5x - 2) = 7(x - (5x - 2))$$

54.
$$\frac{4p}{7 - p} = 1$$

58.
$$\frac{2}{x - 1} = \frac{3}{x - 2}$$

Solve the following equations for r.

81. $I = Prt$
85. $X = P(1 + rt)$
88.
$$S = \frac{r((1 + i)^n - 1)}{i}$$

Chapter 0.8

Solve the following equations using either factoring, completing the square, or the quadratic formula.

2. $t^2 + 3t + 2 = 0$
4. $x^2 + 3x - 10 = 0$
6. $x^2 - 16 = 0$
9. $x^2 - 4 = 0$
13. $4x^2 + 1 = 4x$
18.
$$\frac{1}{7}y^2 = \frac{3}{7}y$$

32. $x^2 - 2x - 15 = 0$

43. $2x^2 + 4x = 5$

48. $x^{-2} + x^{-1} - 12 = 0$

56.
$$\frac{x}{2} = \frac{7}{x} - \frac{5}{2}$$

59.
$$\frac{3x+2}{x+1} - \frac{2x+1}{2x} = 1$$

67. $\sqrt{2x-3} = x - 3$

72. $\sqrt{x} - \sqrt{2x-8} - 2 = 0$

Chapter 0.5

Factor the following expressions completely.

2. $6y^2 - 4y$

3. $10xy + 5xz$

4. $3x^2y - 9x^3y^3$

7. $z^2 - 49$

8. $x^2 - x - 6$

19. $3x^2 - 3$

20. $9y^2 - 18y + 8$

22. $4x^2 - x - 3$

28. $x^2y^2 - 4xy + 4$

37. $b^3 + 64$

38. $x^3 - 1$

41. $(x+3)^3(x-1) + (x+3)^2(x-1)^2$

Chapter 0.6

Perform any necessary operations and simplify the fractions as much as possible. Where necessary, perform operations to express your answer without radicals in the denominator.

1.
$$\frac{a^2 - 9}{a^2 - 3a}$$

2.
$$\frac{x^2 - 3x - 10}{x^2 - 4}$$

7.
$$\left(\frac{y^2}{y-3}\right)\left(\frac{-1}{y+2}\right)$$

8.
$$\left(\frac{t^2 - 9}{t^2 + 3t}\right)\left(\frac{t^2}{t^2 - 6t + 9}\right)$$

9.
$$\left(\frac{ax - b}{x - c}\right)\left(\frac{c - x}{ax + b}\right)$$

22.
$$\frac{\left(\frac{x^2 + 6x + 9}{x}\right)}{x + 3}$$

23.
$$\frac{\left(\frac{10x^3}{x^2 - 1}\right)}{\left(\frac{5x}{x+1}\right)}$$

31.
$$\frac{2}{t} + \frac{1}{3t}$$

32.
$$\frac{9}{X^3} - \frac{1}{X^2}$$

35.
$$\frac{4}{2x - 1} + \frac{x}{x + 3}$$

39.
$$\frac{4}{x - 1} - 3 + \frac{-3x^2}{5 - 4x - x^2}$$

51.
$$\frac{1}{2 + \sqrt{3}}$$

56.
$$\frac{2\sqrt{5}}{\sqrt{3} - \sqrt{7}}$$

59.
$$\frac{5}{2 + \sqrt{3}} - \frac{4}{1 - \sqrt{2}}$$