Math 165/166 Review 1 Name:

This is the review for Chapter 1: Introduction to College Algebra

1. Perform the indicated operations. Write your answers in the simplest form with the positive exponents if there is any. DO NOT USE A CALCULATOR for this problem!

(a) $\frac{2}{15}-\frac{5}{9}+\frac{4}{5}$ (b) $(-\frac{2}{3})\cdot\frac{5}{8}\cdot\frac{3}{4}$ (c) $(\frac{2}{3}\div 8)+(3\cdot\frac{3}{12})$

(d) $2(-7+\frac{1}{6})$ (e) $\frac{2}{5}\div\frac{8}{7}+\frac{13}{20}$ (f) $\frac{12a^3b^{-4}}{4a^{-2}b}$

(g) $(\frac{3x^2}{y})^{-2}$ (h) $\left(\frac{3}{x^{-2}z^4}\right)^{-3}$ (i) $\frac{24(x-2)^5}{8(x-2)^2}$

(j) $\sqrt{18x^5}$ (k) $(-32)^{-4/5}$ (l) $\frac{x^2}{x^{1/2}\cdot x^{3/2}}$ (m) $\frac{7}{8}\cdot\frac{1}{\frac{7}{3}+\frac{11}{12}}$

(n) $(2x^2+3x+8)-(2x-5)$ (o) $(x+2)(x^2-x+1)$ (p) $(x+2)^2$ (q) $(2x-1)(4x+3)$

(r) $(3z+1)(3z-1)$ (s) $(x-y)^2$ (t) $\left(\frac{r^{-2}}{r^{-3}}\right)^2$ (u) $[(x+y)^{-2}]^2$ (v) $(a^{-1}+b^{-1})^{-1}$

2. Evaluate $\frac{|x|}{1+|x|}+\frac{|y|}{1+|y|}$ when $x=-1.5, y=-0.75$.

3. Find $\overline{AB}$ if A=-4 and B=$\frac{3}{2}$.

4. Evaluate the polynomial $2xy^3-y^3+3x^2-2$ when $x=2, y=-4$.

5. An investor buys x shares of IBM stock at $98 per share at Thursday's opening of the stock market. Later in the day, the investor sells y shares of AT&T stock at $38 per share, and z shares of TRW stock at $20 per share. Write a polynomial that express the amount of money the buyer has invested at the end of the day.

6. Factor the following. State irreducible if so.

(a) $2x^4 + x^2$ (b) $x^2 + 4x + 3$ (c) $x^2 + 5x + 5$ (d) $y^2 - \frac{1}{9}$ (e) $3y(y+3) + 2(y+3)(y^2-1)$

(f) $2x^2 + 7xy + 6y^2$ (g) $b^4 + 2b^2 - 8$ (h) $x^2y^2 - y^4$

7. Factor the following formula that was arisen form a science class.

Biology: $C[(R+1)^2 - r^2]$

Physics: $-16t^2 + 64t$

8. Perform the indicated operations and simplify your answer.

(a) $\frac{5x^2 - 45}{2x - 6}$ (b) $\frac{x+2}{3y} \div \frac{x^2 - 2x - 8}{15y^2}$ (c) $\frac{1}{a+2} + \frac{3}{a-2}$ (d) $\frac{1}{x-1} + \frac{2x-1}{(x+1)(x-2)}$ (e) $\frac{\frac{a}{b} - \frac{b}{a}}{\frac{1}{a} + \frac{1}{b}}$

9. Rationalize the denominator: $\frac{\sqrt{2}+1}{\sqrt{2}-1}$

10. Do the indicated operations and simplify.

(a) $4\sqrt{2} - 3\sqrt{2} + \sqrt{18}$ (b) $2\sqrt[3]{y^4} \cdot \sqrt[3]{y^5}$

11. Express the following using an inequality sign and interval notation.

(a) a is negative (b) x is less than or equal to -2 (c) y is strictly between -1 and 3

(d) The distance between x and y is greater than or equal to 1 (no interval notation is required for this!)