Name: MARIE MWOKORO Date:

Course: MAT 110 Nyack College

College Algebra

Preliminary Assessment #2

Directions: Provide complete responses to each question. Make sure to show your work.

1. Simplify the following expressions (leave in common radical form):

a. $\sqrt{50}+\sqrt{32}$ $\Rightarrow \sqrt{50}=\sqrt{25\cdot 2}=5\sqrt{2}$,

$\sqrt{32}=\sqrt{16\cdot 2}\Rightarrow 4\sqrt{2}$, $\therefore 5\sqrt{2}+4\sqrt{2}\Rightarrow \sqrt{2(5+4)}$

$9\sqrt{2}=$

b. $\sqrt{27}+\sqrt{300}$ $\Rightarrow \sqrt{27}=\sqrt{9\cdot 3}\Rightarrow 3\sqrt{3}$

$\sqrt{300}\Rightarrow \sqrt{10^2\cdot 3}\Rightarrow 10\sqrt{3}$

$\Rightarrow 3\sqrt{3}+10\sqrt{3}\Rightarrow \sqrt{3(3+10)}\Rightarrow 13\sqrt{3}$

c. $\sqrt{500}+\sqrt{45}-\sqrt{180}$

$\Rightarrow \sqrt{10^2\cdot 5}+\sqrt{9\cdot 5}-\sqrt{36\cdot 5}\Rightarrow 10\sqrt{5}+3\sqrt{5}-6\sqrt{5}$

$\Rightarrow 13\sqrt{5}-6\sqrt{5}\Rightarrow 7\sqrt{5}$,

d. $\frac{\sqrt{36}-\sqrt{16}}{2}$ $\Rightarrow \frac{\sqrt{6^2}-\sqrt{4^2}}{2}\Rightarrow \frac{6-4}{2}=\frac{2}{2}=1$

Name: MARK NWOKORO Date:

Course: MATH 10 Nyack College

2. Evaluate each expression:

a. $(12-4)+8$

$12-4+8$

$8+8 = 16$

b. $[(1-9)+8]^3 \Rightarrow [-8+8]^3$

$-8^3+8^3 \Rightarrow 0$

c. $\frac{(4)(7)-4}{3\times 2^2} \Rightarrow \frac{28-4}{3\times 4} \Rightarrow \frac{24^2}{12_1} = 2$

d. $\frac{6\{9-2(7+6)\}}{3} = \frac{6(9-14-12)}{3} \Rightarrow \frac{54-84-72}{3}$

$\frac{54-156}{3} \Rightarrow \frac{-102}{3_1} = -34$

Name: MARK NWOKORO Date:

Course: MAT110 Nyack College

3. Factor each expression completely:

a. $x^2 + 12x + 36$ ⇒ use sum product pattern,

$x^2 + 6x + 6x + 36$

$x(x+6) + 6(x+6)$

$(x+6)(x+6) \Rightarrow (x-6)^2$

b. $2x^2 - 17x + 36$ ⇒ $2x^2 - 8x - 9x + 36$

$2x(x-4) - 9(x-4)$ ⇒ Rewrite $2x(x-4) - 9(x-4)$

$(2x+9)(x-4)$

c. $x^3 + x^2 - 6x$ ⇒ $x(x^2 - x - 6)$

$x(x-3)(x+2)$

$x(x-3)(x+2)$

d. $x^2 - 36$

⇒ $x^2 - 36 \Rightarrow x^2 + 6x - 6x - 36$

$x(x+6) - 6(x+6)$

$(x-6)(x+6)$

Ans $(x-6)(x+6)$

Name: MARK NOWICKI Date:

Course: MAT110 Nyack College

4. Evaluate each of the following fractional operations:

a. $\frac{1}{2}+\frac{3}{2}$ $\Rightarrow \frac{1+3}{2} = \frac{4}{2} = 2$

b. $1\frac{1}{2}+\frac{3}{2}-3$ $\Rightarrow$ ———

$\frac{3}{2}+\frac{3}{2}-\frac{3}{1} \Rightarrow \frac{3+3-6}{2} \Rightarrow \frac{6-6}{2} \Rightarrow \frac{0}{2} = 0$

c. $\frac{2}{3}\div\frac{4}{3}+\frac{1}{4} = \frac{2}{3}\times\frac{3}{4}+\frac{1}{4} \Rightarrow \frac{6}{12}+\frac{1}{4} \Rightarrow \frac{6+3}{12} = \frac{9}{12}$

$\frac{\cancel{9}^{3}}{\cancel{12}_{4}} = \frac{3}{4}$

d. $\frac{2}{3}\div\frac{4}{3}+\frac{1}{4}\times\frac{3}{2} \Rightarrow \frac{2}{3}\times\frac{3}{4}+\frac{1}{4}\times\frac{3}{2} \Rightarrow \frac{6}{12}+\frac{3}{8}$

$\Rightarrow \frac{12+9}{24} = \frac{\cancel{21}^{7}}{\cancel{24}_{8}} \Rightarrow \frac{7}{8}$

Name: MARK NWOKORO Date:

Course: MAT 110 Nyack College

5. Solve for the given variable:

a. $5x - 20 = 25$ $\Rightarrow 5x = 25 + 20$

$5x = 45$

$x = \frac{45}{5} = \frac{9}{1}$

b. $2x + 6(x - 2) = 20$ $\Rightarrow 2x + 6x - 12 = 20$

$8x - 12 = 20$

$8x = 20 + 12$

$8x = 32$

$x = \frac{32}{8}$

$x = 4$

Name: MATRIC NUMBER

Date:

Course: MAT 110

Nyack College

c. $\frac{46}{x} - \frac{10}{x} = 6$ ⇒ multiplying each term by x.

$x \times \frac{46}{x} - \frac{10}{x} \times x = 6 \times x$

$46 - 10 = 6x$

$\frac{36^{6}}{6_{1}} = \frac{6x^{1}}{x_{1}}$

$6 = x \therefore x = \underline{6}$

d. $x - \frac{3}{x} = 2$ ⇒ multiplying each by x

$x \times x - \frac{3}{x} \times x = 2 \times x$

$x \times x - \frac{3}{x} \times x = 2 \times x$

$x^2 - 3 = 2x$

$x^2 - 2x - 3 = 0$

$\therefore x(x+1) - 3(x+1) = 0$

$\therefore (x-3)(x+1) = 0$

$\therefore x = 3$ and

$x + 1 = 0 \Rightarrow x = -1$

Ans = $x = 3, \underline{-1}$