HW #2

Kerry Ojakian's MTH 28 Class
Due Date: Thursday April 3 (beginning of class)

General Instructions:

- Homework must be stapled, be relatively neat, and have your name on it.
- Use tutors, work with other students, but ... don't copy!

The Assignment

1. Solve.

   (a) $(x+7)(2x-1)=0$

   (b) $(7x-21)(2x)=0$

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2. Solve.
   $x^2+9x+18=0$

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3. Solve.
   $x^2+4x=12$

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4. Solve.
   $8x^2+80x+200=0$

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5. Simplify.

   (a) $\dfrac{(x+8)(x+2)}{(x-2)(x+8)}$

   (b) $\dfrac{20(x+4)(2x+1)(x-1)(7x)}{30(x)(x-1)(2x+1)(2x-1)}$

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6. Simplify.

(a) $\dfrac{x^2+8x+15}{x^2-9}$

(b) $\dfrac{x^2+2x-15}{x^2+6x+5}$

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7. When is the following expression undefined? And when is it equal to 0?

$$\frac{x^2-25}{x^2-x-20}$$

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8. Multiply and simplify.

(a) $\dfrac{x+2}{x-3}\cdot\dfrac{x+1}{x+2}$

(b) $\dfrac{(x+4)(x+3)}{(x-2)(x-5)}\cdot\dfrac{(x+4)(x-5)}{(x+3)(x+5)}$

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9. Multiply and simplify.

(a) $\dfrac{72x-12x^2}{8x+32}\cdot\dfrac{x^2+10x+24}{36x^2-1}$

(b) $\dfrac{3x^2+15x}{x^2+10x+25}\cdot\dfrac{1}{6x^2+30x}$

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10. Divide and simplify.

(a) $\dfrac{x+2}{x-1} \div \dfrac{x+2}{x+5}$

(b) $\dfrac{(x-3)(x+3)}{(x-7)(x-6)} \div \dfrac{(x-3)(x-5)}{(x-7)(x+5)}$

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11. Simplify.

$$\frac{y^2-9}{2y^2-6y} \div \frac{2y^2+5y-3}{4y^2-1}$$

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12. Simplify. $\dfrac{\dfrac{12}{y}}{\dfrac{3}{xy}-\dfrac{9}{y}}$

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13. Divide and simplify.

(a) $\dfrac{\dfrac{12x-72x^2}{8x-32}}{\dfrac{x^2-36}{x^2-10x+24}}$

(b) $\dfrac{\dfrac{1}{x^2-10x+25}}{\dfrac{1}{5x^3-25x^2}}$

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14. Perform the indicated operations and simplify.

$$\frac{5x-12}{x^2-8x+15} - \frac{3x-2}{x^2-8x+15}$$

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15. Simplify.

$$\frac{5}{x^2+5x+6} + \frac{2}{x+2}$$

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16. Simplify. $\dfrac{2}{x+3} + 2$

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17. Solve each equation:

(a) $\dfrac{3}{2} - \dfrac{2}{2x-4} = \dfrac{1}{x-2}$

(b) $\dfrac{3y}{2+y} - \dfrac{2}{y+3} = \dfrac{36}{y^2+5y+6}$

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18. Simplify.

(a) $\sqrt{12\,x^{13}}$ (b) $\sqrt{50\,x^7\,y^4}$

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19. Simplify.

(a) $\sqrt[4]{32\,x^9}$ (b) $\sqrt[3]{24\,x^5\,y^{10}}$

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20. Simplify.

(a) $\sqrt{\dfrac{50\,x^7}{98\,x^3}}$ (b) $\sqrt[3]{\dfrac{15\,x^5}{40\,x^3}}$

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21. Rewrite using radicals.

(a) $u^{-\frac{3}{2}}$ (b) $x^{\frac{2}{3}}$

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22. Rewrite using rational exponents.

(a) $(\sqrt{x})^3$ (b) $(\sqrt[3]{x})^5$

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23. Simplify (so no radical or exponents are left).

(a) $9^{\frac{1}{2}}$ (b) $25^{-\frac{1}{2}}$

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24. Simplify the following expression.

$$\left(\frac{8x^2y^{-3}u^2}{27x^2y^6u^{-1}}\right)^{-\frac{2}{3}}$$
