Math 150 - Week-In-Review 1

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Problem Statements

You should attempt the problems yourself first. The next section contains the solutions.

1. Find an equation of the line through the points $(3, 9)$ and $(-7, 1)$ in standard form.

2. Find an equation of the line through the points $(3, 9)$ and $(3, -2)$.

3. Find an equation of the line through the points $(3, 9)$ and $(-1, 9)$.

4. Write an equation of a line a) parallel to and b) perpendicular to the line $5 + x - 2y = 0$ and passing through the point $(4, -3)$ in slope-intercept form.

5. Solve the following inequalities. Graph their solution set.

(a) $\frac{x}{2} - \frac{3}{5} \leq \frac{1-2x}{10}$

(b) $-5 \leq \frac{1-4x}{2} < 7$

(c) $|3x - 1| < 11$

6. Simplify the following expression. Write your answer so that each variable appears at most once, and all exponents are positive.

$$\frac{15(xy^{-1})^2(x^{-2}y^2)^3}{5(x^{-1/2})^4(xy^{-3})^{-2}}$$

7. Simplify each radical expression.

(a) $\sqrt[3]{\dfrac{16x^4y^2z^4}{27x^2y^5}}$

(b) $\sqrt{x^3}+\sqrt{4x^3}-\sqrt{8x}$

8. Rationalize the denominator.

(a) $\dfrac{5-z}{\sqrt{5}+\sqrt{z}}$

(b) $\dfrac{5\sqrt{3}-3\sqrt{2}}{2\sqrt{3}+3\sqrt{2}}$

9. Simplify the following expression. Leave answer with rational exponents.

$$\left(\frac{a^{5/4}\cdot a^{-1/8}}{a^{1/4}}\right)^{8/3}$$

10. Factor each expression.
    (a) $x^2y^2 - 10xy + 25$

    (b) $4y^2 - 4y - 3$

    (c) $(x+2)(x^2-8) + (x+2)^2(x-1)$