Solve each equation.

1) $-1 + 3(1 + 2x) = -4x + 2(3x - 5)$

2) $\dfrac{93}{50} = -\dfrac{1}{5}v - \dfrac{17}{8}v$

Solve each inequality, write its solution set in interval notation, and graph the solution set on a number line.

3) $-5(-x - 1) + 4 \le -6 - 2(x + 3)$

4) $-\dfrac{9}{5} - \dfrac{4}{3}m \le \dfrac{1}{5}$

Solve each compound inequality, write its solution set in interval notation, and graph the solution set on a number line.

5) $-4 \le 5a + 6 < 41$

6) $-\dfrac{25}{48} \le -\dfrac{5}{8}n < \dfrac{5}{4}$

Write the standard form of the equation of the line described.

7) through: $(-4, 4)$, perpendicular to $y = \dfrac{4}{7}x$

Rewrite the equation in slope-intercept form and then use the slope and y-intercept to sketch a graph of the line with the given equation.

8) $3x + 5y = -10$

Show all work as you solve the linear modeling problem below.

9) There were 165 Apple stores worldwide in 2006 and 410 Apple stores worldwide in 2013. Write a linear equation in slope-intercept form that models this growth. Let x stand for the number of years after 2006 and let y = the number of Apple stores worldwide.

Simplify. Your answer should contain only positive exponents.

10) $5m^5n^2 \cdot 3m^4n^0$

11) $\dfrac{2x^3y^4 \cdot -3xy}{-3x^{-4}y^2}$

12) $\left(3x^{-4}\right)^{-1}$

13) $2x^0y^{-2} \cdot \left(x^4\right)^4$

Perform the indicated operation and simplify.

14) $\left(6n^3 + 5n - 4\right) - \left(3n - 7 + n^3\right)$

Multiply as indicated and simplify.

15) $\left(4n - 2\right)\left(8n^2 - 8n - 4\right)$

Solve the equation by factoring.

16) $6n^2 = 5 + 7n$

Solve the equation by completing the square.

17) $n^2 + 6n - 55 = 4$

Solve the equation by use of the quadratic formula.

18) $3m^2 = -2m + 7$

State the excluded values for the following expression. Then simplify the expression.

19) $\dfrac{r^2 - 4r - 45}{r^2 - 2r - 35}$

Solve the equation and show the check of the potential answer(s). If any answers are excluded values, state this on your answer sheet.

20) $\dfrac{6}{n^3 - 9n^2 + 20n} = \dfrac{1}{n^3 - 9n^2 + 20n} + \dfrac{1}{n - 5}$

Simplify the radical expressions.

21) $\sqrt{200x^4 y^4 z^3}$

22) $\left(-4\sqrt{3} - 5\right)\left(3\sqrt{3} - 3\right)$

Solve the equation and show the check of the potential answer(s). If any answers are extraneous solutions, state this on your answer sheet.

23) $\sqrt{4b - 20} - b = -4$

Show all work as you solve the following problems and write complete answers, including appropriate units.

24) A cargo plane left Paris and flew east. One hour later an Air Force plane left flying 17 mph faster in an effort to catch up to it. After ten hours the Air Force plane finally caught up. Find the cargo plane's average speed.

25) Jennifer put $18,000 in an education account on the day her daughter was born. If the account earned 6.15% interest compounded quarterly, what was the total in the account when her daughter turned 18? Round the final answer to the nearest cent.