Exam

Name ______________________________ Practice sample final exam

Answer all 25 questions. Each question is worth 4 points. Show all work for full credit.
NO CELL PHONE IS ALLOWED DURING THE TEST (PLEASE TURN OFF YOUR CELL PHONE)
SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Solve the equation. Check your solution.
   1) \(8x - (6x - 1) = 2\)  

   2) \(\frac{1}{4}x - \frac{3}{8}x = 4\)

Solve the formula for the stated variable.
   3) \(F = \frac{9}{5}C + 32\); solve for \(C\)

Solve the problem.
   4) A car rental agency advertised renting a luxury, full-size car for $19.95 per day and $0.49 per mile. If you rent this car for 2 days, how many whole miles can you drive if you only have $200 to spend.
Solve the inequality and express the solution set in interval notation. Graph the solution set on the real number line.
5) \(-3x > 42\)

\[\begin{align*}
-3x &> 42 \\
\frac{-3x}{-3} &> \frac{42}{-3} \\
-x &< -14 \\
x &> 14
\end{align*}\]

Solve the problem.
6) Claire has received scores of 85, 88, 87, and 75 on her algebra tests. What is the minimum score she must receive on the fifth test to have an overall test score average of at least 83? (Hint: The average of a list of numbers is their sum divided by the number of numbers in the list.)

6) \[\text{Average score} = \frac{85 + 88 + 87 + 75 + x}{5} \geq 83\]

Graph the linear equation by finding and plotting its intercepts.
7) \(-5x - 30y = 30\)

\[\begin{align*}
-5x - 30y &= 30 \\
-5x &= 30 + 30y \\
-x &= 6 + 6y \\
-x &= \frac{6}{6}y + \frac{6}{6} \\
-x &= y + 1
\end{align*}\]

Find the equation of the line described. Write the equation in slope-intercept form, if possible.
8) \((-1, -11)\) and \((2, 10)\)

8) \[
\begin{align*}
\text{Slope} m &= \frac{y_2 - y_1}{x_2 - x_1} \\
&= \frac{10 - (-11)}{2 - (-1)} \\
&= \frac{21}{3} \\
&= 7
\end{align*}\]

\[y - y_1 = m(x - x_1)\]
\[y - (-11) = 7(x - (-1))\]
\[y + 11 = 7(x + 1)\]
\[y + 11 = 7x + 7\]
\[y = 7x - 4\]
Find the equation of the line that has the given properties. Write the equation in slope-intercept form, if possible.
9) Contains (-5, 5); parallel to 2x - 5y = -7

Graph the inequality.
10) 2x + y ≤ -3

Find the product using the FOIL method.
11) \((x^2 + 5)(x^2 + 3)\)

Find the product.
12) \((5x - 11y)^2\)
Find the quotient using long division.

13) \( \frac{x^3 + 4x^2 - 14x - 19}{x - 3} \)

Perform the indicated operation. Express the answer in scientific notation.

14) \( \frac{9.52 \times 10^{-6}}{2.8 \times 10^{-7}} \)

Factor the polynomial completely using the trial and error method.

15) \( 15x^2 + 12x - 3 \)

Solve the equation by factoring.

16) \( 3x^2 - 18x + 24 = 0 \)

Perform the indicated operation.

17) \( \frac{4}{s - 7} + \frac{s - 7}{s + 7} \)
Solve the equation for the indicated variable.

18) \( P = \frac{A}{1 + rt} \) for \( r \)

19) \( |2x + 7| = 9 \)

20) \( |2k + 4| \leq 9 \)

21) \( |x - 12| > 18 \)

22) \( 2x^2 + 10x = -1 \)

Use the quadratic formula to solve the equation.
Use the product rule to multiply. Assume all variables represent positive real numbers.

\[ 23) \sqrt[4]{16} \cdot \sqrt[4]{81n^4} \]

Use the quotient rule to divide and simplify.

\[ 24) \frac{\sqrt[5]{32x^5}}{\sqrt[5]{y^{15}}} \]

Simplify the radical expression. Assume that all variables represent positive real numbers.

\[ 25) \sqrt[4]{147k^7q^8} \]
Answer Key
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1) \( \frac{1}{2} \)
2) \([-32]\)
3) \( C = \frac{5}{9}(F - 32) \)
4) 326
5) \((-\infty, -14)\)

6) 80
7) \((0, -1), (-6, 0)\)

8) \( y = 7x - 4 \)
9) \( y = \frac{2}{5}x + 7 \)

10)

11) \( x^4 + 8x^2 + 15 \)
12) \( 25x^2 - 110xy + 121y^2 \)
13) \( x^2 + 7x + 7 + \frac{2}{x - 3} \)
14) \( 3.4 \times 10^1 \)
15) \((3x + 3)(5x - 1)\)
16) \([2, 4]\)
Answer Key
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17) \( \frac{s^2 - 10s + 77}{(s - 7)(s + 7)} \)

18) \( r = \frac{A - P}{Pt} \)

19) \( \{1, -8\} \)

20) \( \left[ \begin{array}{c} -13 \\ \frac{5}{2} \end{array} \right] \)

21) \( (-\infty, -6) \cup (30, \infty) \)

22) \( \left\{ \frac{-5 - \sqrt{23}}{2}, \frac{-5 + \sqrt{23}}{2} \right\} \)

23) \( 6n \)

24) \( \frac{2x}{y^3} \)

25) \( 7k^3q^4 \sqrt{3k} \)