**Part 1: Compute the following. Show all work for credit. 2 points each.**

1) \( \frac{-3^2}{7} = \)

2) \( \frac{-3}{4} \div \left( \frac{-9}{8} \right) = \)

3) \( -|3 + 6| = \)

4) \( \frac{1}{4} + \frac{2}{3} - \frac{5}{2} = \)

5) \( 16 \div 4 - 2 \cdot 3^2 = \)

6) \( 4^{-2} + 4 = \)

7) \( \frac{21}{2} \times \frac{4}{3} = \)

8) \( 4^2 = \)

9) \( 12.9 - 1.01 = \)

10) \( 21 \cdot 0 \cdot (5 + 4) = \)

Put answers HERE!!
Part II. Show all work for possible partial credit. 5 points each.

11. Solve the equation for x.

\[ 5x = 2(3 - 5x) - 5 \]

12. Solve the inequality. Give the solution set in both interval and graph forms.

\[ \frac{2}{3}x \geq -4 \]

Graph solution: 

Interval notation:

13. Graph the given line. **Label all intercepts.**

\[ 3x + 7y = 4 \]
14. Graph the line that has a \( y \)-intercept of \((0,4)\) and a slope of \(\frac{1}{3}\).
   Label at least 2 points.

15. Find the product and simplify: \((x - \sqrt{y})(x - \sqrt{y})\)

16. Simplify the expression: \(\frac{1}{2} \cdot \frac{3}{6x} + \left(\frac{3}{3x}\right)\)

17. Simplify using **only positive exponents**. Assume all variables represent positive real numbers.
   \[
   \frac{2x^5 \cdot 3^{-2}}{(x^{-2})^3}
   \]
Factor completely, write prime if it can't factor:

18. \(3y^2 - 11y - 20\)

19. \(2x^3 - 50x\)

20. \(2a^3 + a^2 - 14a - 7\)

21. Express and simplify in lowest terms: \(\frac{x^2 - 9}{x^2 - x - 6}\)

22. Solve: \(x^2 - 81 = 0\).

23. Find the slope of the line through the points \((4, -1)\) and \((-3, 4)\).

24. Given \(C = \frac{5}{9}(F - 32)\), solve for \(F\).
25. For the given right triangle, find \( x \). You must set up and solve an equation for credit.

\[ \frac{3x - 5}{3} + \frac{x + 4}{4} = 1 \]

26. Solve for \( x \).

\[ 14 + 4 \frac{3}{5} = \frac{x}{2} \]

27. Multiply and simplify:

\[ \frac{4x - 20}{5x} \cdot \frac{4x^4}{10 - 2x} \]
28. Choose a domain for each function. Write the correct number in the answer blank.

   a) \( f(x) = \frac{4}{x - 3} \) \hspace{1cm} Answer ________
      
      1) \((-\infty, \infty)\)
      2) \((0, \infty)\)
      3) \((9, \infty)\)
      4) \([3, \infty)\)
      5) \((-\infty,3) \cup (3, \infty)\)
      6) Not listed.

   b) \( g(x) = \sqrt{x} - 3 \) \hspace{1cm} Answer ________
      
      The point slope form is \( y - \) _____ = ____\((x - \) ____)_.

   c) \( h(x) = \sqrt{x} - 3 \) \hspace{1cm} Answer ________

29. Find the equation of the line passing through \((-2,-1)\) with slope 5.

   The slope intercept form is \( y = \) _____ \( x + \) _____.

30. For the following pair of functions, find the following. Be sure to express in simplest form.
    \( f(x) = 4x - 3 \) and \( g(x) = -2x^2 + 2x + 6 \)
    
    (a) \( (f - g)(3) = \) 
    
    (b) \( (f + g)(x) = \) 

31. Perform the indicated operation. Reduce to lowest terms.
    \[
    \frac{2}{x - 2} - \frac{5}{x^2 - 2x}
    \]
32. Express the radical in simplified form. Assume that all variables represent positive real numbers.

a) \( \sqrt[4]{\frac{25a^6}{81b^{10}}} \)  

b) \( 2\sqrt{24} + \sqrt{54} \)

33. Graph the function by creating a table of ordered pairs:

\( f(x) = x^2 + 2 \)

<table>
<thead>
<tr>
<th>( x )</th>
<th>( y )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( 2 )</td>
<td>( 6 )</td>
</tr>
<tr>
<td>( 4 )</td>
<td>( 8 )</td>
</tr>
<tr>
<td>( 6 )</td>
<td>( 10 )</td>
</tr>
<tr>
<td>( 8 )</td>
<td>( 12 )</td>
</tr>
<tr>
<td>( 10 )</td>
<td>( 12 )</td>
</tr>
</tbody>
</table>

34. Complete the following table.

<table>
<thead>
<tr>
<th>Inequality(set)</th>
<th>Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) ( x &lt; 5 )</td>
<td>( (-\infty, 5) )</td>
</tr>
<tr>
<td>b) ( )  ( (-\infty, 2) )</td>
<td></td>
</tr>
<tr>
<td>c) ( -3 &lt; x \leq 1 )</td>
<td>( (-3, 1] )</td>
</tr>
<tr>
<td>d) ( x \neq 2 )</td>
<td>( )</td>
</tr>
</tbody>
</table>
35. Solve for \( x \). \[ x^3 - 14x^2 + 45x = 0 \]

36. Solve for \( p \) algebraically. \[ \sqrt{5p + 6} = p \]
Remember to check.

37. Given \( f(x) = x^2 - 3x + 2 \), evaluate
   
   a) \( f(-2) \)
   
   b) \( f(2p) \)
Part IV. Choose 3 of the following 5 problems. You must indicate the 3 problems to be graded. If not, we will grade the first three. Show all work for possible partial credit. 7 points each.

☐ 38. Solve for $x$ and simplify answers.  $x^2 - 6x + 3 = 0$

Grade


Grade

☐ 40. How many gallons of 40% antifreeze must be mixed with 10 gallons of 70% solution to get a 50% solution? Must set up equation(s) and/or table for credit.

Grade
41. The base of a parallelogram is 5 feet more than the height. If the area of the parallelogram is 36 ft.\(^2\), what are the measures of the base and height?

SET UP AND SOLVE AN EQUATION FOR CREDIT!

area of parallelogram = base times height

42. Graph the function \( f(x) = \frac{3}{x} \). Label at least 5 pts.