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Complete the following problems. Put your final answer in the blank. These problems are similar to ones that we will be covering during the first portion of the course. This quiz will not count for a grade. It is just to inform you of your level of preparation for the course, and give you an idea of where to focus your attention during the first part of the course.

1.  $-(3 - 5) - (2 - (3^2 - 13)) =$

$$\begin{aligned} &= -(-2) - (2 - (9 - 13)) \\ &= 2 - (2 - (-4)) \\ &= 2 - (2 + 4) \\ &= 2 - 6 \\ &= -4 \end{aligned}$$

2. If  $p = -2$ ,  $q = 4$ , and  $r = -5$ , what is the correct value of  $\frac{q+r}{q+p}$ ?

$$\frac{4 + -5}{4 + -2} = \frac{4 - 5}{4 - 2} = \frac{-1}{2}$$

3. Simplify  $(-2p^3 - 5p + 7) - (2p^2 - 6p - 2)$

$$\begin{aligned} &= -2p^3 - 5p + 7 - 2p^2 + 6p + 2 \\ &= -2p^3 - 2p^2 + p + 9 \end{aligned}$$

4. Factor  $x^2 - 5x + 4$

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

5. What is  $\frac{15p-3}{6} \div \frac{10p-2}{3}$  in lowest terms?

$$\begin{aligned} \frac{15p-3}{6} \div \frac{10p-2}{3} &= \frac{15p-3}{6} \cdot \frac{3}{10p-2} \\ &= \frac{3(5p-1)}{2} \cdot \frac{1}{2(5p-1)} \\ &= \frac{3}{4} \end{aligned}$$

For the next two problems, simplify the expressions to use only positive exponents:

6.  $\frac{4^{-2}}{4^3}$

$$\begin{aligned}\frac{4^{-2}}{4^3} &= \frac{1}{4^2} \cdot \frac{1}{4^3} \\ &= \frac{1}{4^5}\end{aligned}$$

7.  $\frac{z^5 \cdot z^4}{z^2}$

$$\begin{aligned}\frac{z^5 \cdot z^4}{z^2} &= z^5 \cdot z^2 \\ &= z^{5+2} = z^7\end{aligned}$$

For the next three problems, solve for  $x$ :

8.  $4 - 5x = 9$

$$\begin{aligned}-5x &= 5 \\ x &= -1\end{aligned}$$

9.  $(x - 3)(x - 2) = 0$

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$$x = 3 \text{ or } x = 2$$

10.  $(x - 2)^2 = 7$

$$\begin{aligned}x^2 - 4x + 4 &= 7 \\ x^2 - 4x - 3 &= 0 \\ x &= \frac{4 \pm \sqrt{16 - 4(1)(-3)}}{2} \\ &= \frac{4 \pm \sqrt{16 + 12}}{2} \\ &= \frac{4 \pm \sqrt{28}}{2} \\ &= \frac{1 \pm 2\sqrt{7}}{2} \\ &= 2 \pm \sqrt{7}\end{aligned}$$