Question 1. Simplify the following expression:

$$\frac{49 \cdot 5^{-2}}{7^{-1} \cdot 5^{-1}}$$
A) $\frac{221}{25}$ B) $\frac{49}{35}$ C) $\frac{343}{5}$ D) $\frac{7}{25}$ E) $\frac{25}{49}$

Question 2.

Solve the following equation:

$$\frac{18}{x} = \frac{10}{x-4}$$
A) $x = 11$ B) $x = \frac{24}{13}$ C) $x = -4$ D) $x = \frac{11}{15}$ E) $x = 9$

Question 3. Determine which of the expressions below is equal to:

$$\frac{2x-1}{2x^2-9x+4}$$

A)
$$\frac{1}{x-4}$$
 B) $\frac{2}{2x-1}$ C) $\frac{3}{x-4}$
D) $\frac{2x-1}{x-4}$ E) $\frac{3}{3x+1}$

Question 4 Describe the set of all solutions to the quadratic inequality:

$$2x^2 + 4x - 3 < 3$$

A) $(-1, \frac{3}{2})$ B) $(-3, 1)$ C) $[-1, 3]$ D) $[-3, \frac{1}{2}]$ E) $(-\infty, -3)$ and $(1, \infty)$

Question 5 Find all values of x satisfying the following inequality:

$$\frac{3x-5}{x-5} > 4$$
A) $(-\infty, 5)$ and $(12, \infty)$ **B)** $(-\infty, -3)$ and $(-1, \infty)$ **C)** $(5, 15)$ **D)** $(-15, 5)$ **E)** $(-3, 5)$

Question 6 Find all values of x satisfying the following inequality:

$$|x - 20| \le 6$$

A) [14, 26] B) $(-\infty, 14)$ and $(26, \infty)$ C) $(-3, 14)$ D) $(-14, 3)$ E) [3, 14]

Question 7.

Solve:

$$(x-12)^2 = 16$$

A) 8, 16 **B)** 7, 14 **C)** 8, 12 **D)** -8, 8 **E)** 3, 14

Question 8.

Solve:

$$(x+2)^2 = 14$$

A) x = 3, -8 B) $x = -2 \pm \sqrt{14}$ C) $x = -1 \pm \sqrt{12}$ D) $x = 2 \pm \sqrt{7}$ E) There are no solutions.

Question 9. Simplify the following expression:

A)
$$\frac{x^3 - 4x}{x^2 + x - 2}$$

E) $\frac{x(x-3)}{x-1}$
B) $\frac{x(8x-3)}{x+1}$
C) $\frac{7x+9}{(x-3)(x+1)(x+2)}$
D) $\frac{10x+3}{(x-3)(x+1)}$

Question 10.

A farmer plans to fence a rectangular region adjacent to a river. The rancher has 100 meters of fence. No fencing is needed along the river. Write the area of the fenced in region A(x) as a function of x, the length of the side parallel to the river. **A**) $A(x) = \frac{100x - x^2}{2}$ **B**) $A(x) = \frac{100 - x}{2}$ **C**) $A(x) = \frac{100x - 3x^2}{2}$ **D**) $A(x) = \frac{100x - 3x^2}{4}$ **E**) $A(x) = \frac{50x - x^2}{2}$