Test IV Math 150

Place your name in the upper right hand corner. Place your answer in the blank to the left. Show your work on a separate sheet. Have loads of fun on your almost last math test! 😊

\[ ax^2 + bx + c = 0 \iff x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \]

Reduce the following expressions.

\[ \frac{x - x^2}{6x - 6} \quad \frac{x^2 + 13x + 12}{x^2 - 144} \]

\[ \frac{x^2 - 1}{3x + 6} \cdot \frac{x + 2}{x + 1} \quad \frac{a^2 - 1}{a^2 - 4} \cdot \frac{a^2 + 3a + 2}{a^2 + 2a + 1} \]

Solve the following for ‘x’.

\[ \frac{x - x^2}{6x - 6} \quad \frac{x^2 + 13x + 12}{x^2 - 144} \]

\[ \frac{x^2 - 1}{3x + 6} \cdot \frac{x + 2}{x + 1} \quad \frac{a^2 - 1}{a^2 - 4} \cdot \frac{a^2 + 3a + 2}{a^2 + 2a + 1} \]

5) An inlet pipe can fill a pool in 4 hours. Another pipe can fill a pool in 8 hours. How long will it take both pipes to fill half of a pool?

6) A plane can fly 300 miles downwind in the same time it can fly 200 miles upwind. Find the velocity of the wind if the plane can fly 250 miles per hour in still air.

7) The hypotenuse of a right triangle is 6 meters long. One leg is 2 meters shorter than the other leg. Find the lengths of the legs.

8) One leg of a right triangle exceeds the shorter leg by one inch, and the hypotenuse exceeds the longer leg by 7 inches. Find the lengths of the legs.

9) Solve for \( x \), \( x^2 - 2x - 7 = 0 \).

10) Solve for \( x \), \( x^2 + x - 4 = 0 \).

11) Solve for \( x \), \( x^2 + 1 = 0 \).

12) Solve for \( x \), \( x^2 - 2dx - 15d^2x = 0 \).