Question 1: True/False [3]

\[
\frac{20d^2 - 50d^3 + 10d}{-10d} = -2d + 5d^2 - 1, \text{ if } d \text{ is not equal to } 0.
\]

TRUE  FALSE

Question 2: True/False [2]

\[
\frac{3b^3}{8a} + \frac{15}{4} \text{ simplified will equal } \frac{ab^3}{10}
\]

TRUE  FALSE

Question 3: True/False [2]

\[
\frac{x}{y} \div \left( \frac{a}{b} \times \frac{c}{d} \right) \text{ simplified will equal } \frac{bdx}{acy}
\]

TRUE  FALSE

Question 4: True/False [2]

\[
\frac{3}{x} + \frac{2}{y} \text{ simplified will equal } \frac{3x + 2y}{xy}
\]

TRUE  FALSE

Question 5: True/False [2]

Given the expression \( \frac{3}{x^2} + \frac{2}{y^2} \)

Simplifying is as follows:

\[
= \frac{5x^2y^2}{x^2y^2}
\]

When these fractions are added, it will be done as follows:

TRUE  FALSE
Question 6: True/False [3]  
\[ \frac{1}{a + b} \] simplified will equal \((a + b)(a + b)\).

TRUE  FALSE

Question 7: True/False [2]  
Consider the two fractions, where \(x\) is a natural number:

\[ R = \frac{5}{x} \quad \text{and} \quad S = \frac{5}{3x} \]

For all natural values of \(x\): \(R < S\)

TRUE  FALSE

Question 8: Multiple Choice [2]  
Simplify the expression:

\[ \frac{6x^3y}{-5x^3y} - \frac{15x^4y^4}{-5x^3y} = \ldots \]

A \[-12x^3y + 15x^4y^4\]  
B \[\frac{9}{xy}\]  
C \[-12x^3y + 3xy^2\]  
D \[55x^3y - 20xy^2\]

Question 9: Multiple Choice [2]  
Simplify the expression:

\[ \frac{x^2 + y^2}{(x + y)^2} = \ldots \]

A \[1\]  
B \[\frac{1}{2xy}\]  
C \[\frac{x^2}{x + y}\]  
D \[\frac{y^2}{x + y}\]
Question 10: Multiple Choice [4]

Simplify the expression: \( \frac{1}{x} + \frac{2}{x^2} + \frac{1}{x^3} \) = ...

A \( \frac{1}{x^3} \)  
B \( \frac{x + 2x^2 + x^3}{(x + 1)^2} \)  
C \( 1 \)  
D \( x \)  
E \( x^3 \)

Question 11: Multiple Choice [3]

Simplify the expression: \( \frac{3}{2} - \frac{4 - p}{8p} + \frac{3}{4p} = ... \)

A \( \frac{13p + 2}{8p} \)  
B \( \frac{11p + 2}{8p} \)  
C \( 13p + 2 \)  
D \( 11p + 2 \)
Question 12: Multiple Choice \[4\]

Simplify the expression: \[\frac{3 - x}{3x} + \frac{3 - x}{3} - \frac{3 - x}{3x^2} = \ldots\]

A \[\frac{-x^3 + 2x^2 + 4x - 3}{3x^2}\]

B \[\frac{-x^3 + 2x^2 + 2x - 3}{3x^2}\]

C \[\frac{-x^3 + 2x^2 + 4x - 3}{3}\]

D \[\frac{-x^3 + 2x^2 + 2x - 3}{3}\]

E \[\frac{3 - x}{-3x^2 + 3x + 3}\]

Question 13: Multiple Choice \[3\]

Simplify the expression: \[\frac{4t^2}{3k^3} \times \frac{k^4 - k^3}{2t} \div \frac{2t}{3} = \ldots\]

A \[k - 1\]

B \[\frac{1}{(k - 1)}\]

C \[\frac{4t^2 (k - 1)}{9}\]

D \[\frac{t^2}{k^2}\]

Question 14: Multiple Choice \[2\]

Study the following attempt at simplification, and then choose the best option given:

\[
\frac{3x^2 - 8x}{3x^2} = \frac{3x^2}{3x^2} - \frac{8x}{3x^2} = -8x
\]
A  No errors were made; 
the simplification is correct

B  An error was made with cancelling and then simplifying; 
the answer should be $1 - 8x$

C  An error was made with cancelling terms; 
the answer should be $\frac{3x - 8}{3x}$

Question 15: Socrates [2]

Simplify the expression: $\frac{3}{2p} + \frac{7}{5p} = \ldots$

Type the number only.

15 Questions, 5 Pages