Answers

1. A 2. D 3. B 4. C 5. D 6. B 7. A 8. D 9. C 10.B

Answer Key

1. **A.** In this problem, we are given the expression $\frac{3k}{4k+12}+\frac{k+5}{k^2+3k}$ and asked to find an equivalent expression to the sum.

$$\frac{3k}{4k+12}+\frac{k+5}{k^2+3k}\rightarrow\frac{3k}{4\left(k+3\right)}+\frac{k+5}{k\left(k+3\right)}\rightarrow\frac{3k^2}{4k\left(k+3\right)}+\frac{4k+20}{4k\left(k+3\right)}\rightarrow\frac{3k^2+4k+20}{4k\left(k+3\right)}$$

2. **D.** In this problem, we are given the expression $\frac{36x^4y^2-18x^6y^4}{6x^5y^2}$ and asked to find an equivalent expression.

$$\frac{36x^4y^2-18x^6y^4}{6x^5y^2}\rightarrow\frac{\cancel{6}\left(6\right)x^4y^2-\cancel{6}\left(3\right)x^6y^4}{\cancel{6}x^5y^2}\rightarrow\frac{6\cancel{x^4}y^2-3\cancel{x^4}\left(x^2\right)y^4}{\cancel{x^4}\left(x\right)y^2}\rightarrow\frac{6\cancel{y^2}-3x^2\cancel{y^2}}{x\cancel{y^2}}\rightarrow\frac{6-3xy^2}{x}$$

3. **B.** In this problem, we are given the expression $\frac{9k^2-30k+25}{3k^2+16k-35}\times\frac{2k^2+5k-63}{2k^2-9k}$ and asked to find the equivalent expression for the product above.

$$\frac{9k^2-30k+25}{3k^2+16k-35}\times\frac{2k^2+5k-63}{2k^2-9k}\rightarrow\frac{\left(3k-5\right)^{\cancel{2}}}{\cancel{\left(3k-5\right)\left(k+7\right)}}\times\frac{\cancel{\left(2k-9\right)\left(k+7\right)}}{k\cancel{\left(2k-9\right)}}\rightarrow\frac{3k-5}{k}$$

4. **C.** In this problem, we are given the expression $\frac{7m^2+6m}{4m-7}-\frac{3m}{4m-7}$ and asked to find an equivalent expression to the difference.

$$\frac{7m^2+6m}{4m-7}-\frac{3m}{4m-7}\rightarrow\frac{7m^2+\left(6m-3m\right)}{4m-7}\rightarrow\frac{7m^2+3m}{4m-7}$$

5. **D.** In this problem, we are given the expression $\frac{8}{5y}\times\frac{2x}{16y}$ and asked to find an equivalent expression to the product.

$$\frac{8}{5y}\times\frac{2x}{16y}\rightarrow\frac{\cancel{8}}{5y}\times\frac{\cancel{2}x}{\cancel{2}\left(\cancel{8}\right)y}\rightarrow\frac{x}{5y^2}$$

6. **B.** In this problem, we are given the expression $\frac{2x}{5b}-\frac{7x}{10b}$ and asked to find an equivalent expression to the difference.

$$\frac{2x}{5b}-\frac{7x}{10b}\rightarrow\frac{4x}{10b}-\frac{7x}{10b}\rightarrow-\frac{3x}{10b}$$

7. **A.** In this problem, we are given the expression $\frac{\frac{x^7y^4z^3}{ab}}{\frac{x^7y^3z^2}{a^3b^2}}$ and asked to find an equivalent expression to the quotient.

$$\frac{\frac{x^7y^4z^3}{ab}}{\frac{x^7y^3z^2}{a^3b^2}} \rightarrow \left(\frac{\cancel{x^7y^3}(y)\cancel{z^2}(z)}{\cancel{ab}}\right) \times \left(\frac{a^2(\cancel{a})b(\cancel{b})}{\cancel{x^7y^3}\cancel{z^2}}\right) \rightarrow \frac{yz}{1} \times \frac{a^2b}{1} \rightarrow yza^2b$$

8. **D.** In this problem, we are given the expression $\frac{16c^2-4c^3}{4c^2-64}$ and asked to find an equivalent expression for all values $c > 4$.

$$\frac{16c^2-4c^3}{4c^2-64} \rightarrow \frac{4c^2(4-c)}{4(c^2-16)} \rightarrow \frac{4c^2(-1)\cancel{(c-4)}}{4\cancel{(c-4)}(c+4)} \rightarrow -\frac{\cancel{4}c^2}{\cancel{4}(c+4)} \rightarrow -\frac{c^2}{c+4}$$

9. **C.** In this problem, we are given the expression $\frac{x^2+7x+12}{x^2+9x+20}$ and asked to find an equivalent expression for all $x > 0$.

$$\frac{x^2+7x+12}{x^2+9x+20} \rightarrow \frac{(x+3)\cancel{(x+4)}}{\cancel{(x+4)}(x+5)} \rightarrow \frac{x+3}{x+5}$$

10. **B.** In this problem, we are given the expression $\frac{x^3+7x^2}{x^3}$ and asked to find equivalent expression for all $x > 1$.

$$\frac{x^3+7x^2}{x^3} \rightarrow \frac{\cancel{x^2}(x+7)}{\cancel{x^3}} \rightarrow \frac{x+7}{x}$$