1. $\frac{3}{4x^2}-\frac{5}{6x^2}$

Which of the following expressions is equivalent to the expression above for $x>0$? *(no calculator)*

A) $\frac{1}{12x^2}$

B) $\frac{1}{6x^2}$

C) $-\frac{1}{12x^2}$

D) $-\frac{1}{6x^2}$

2. If $\frac{x-y}{y}=\frac{4}{9}$, which of the following must also be true? *(no calculator)*

A) $\frac{x}{y}=-\frac{4}{9}$

B) $\frac{x}{y}=\frac{13}{9}$

C) $\frac{x+y}{y}=\frac{5}{9}$

D) $\frac{x-2y}{y}=-\frac{14}{9}$

3. $\frac{x+6}{6}+\frac{x-6}{6}$

Which of the following is equivalent to the expression above? *(no calculator)*

A) $\frac{x-x}{6}$

B) $\frac{x+x}{6}$

C) $\frac{6+6}{6}$

D) $\frac{6-6}{6}$

4. $5^2(15k)-25$

Which of the following is equivalent to the expression above? *(no calculator)*

A) $15k$

B) $5\left(25(15k)-5\right)$

C) $625k-25$

D) $375k-25$

5. $\left(2j^2k\right)^4+(\theta-4)$

Which of the following is equivalent to the expression above? *(no calculator)*

A) $\left(16j^8k^4\right)+(\theta-4)$

B) $\left(8j^8k^4\right)+(\theta-4)$

C) $\left(16j^2k^4\right)+(\theta-4)$

D) $2j^2k^4(8)+(\theta-4)$

6. $\left(3s^5t\right)^4+(p-3)$

Which of the following is equivalent to the expression above? *(no calculator)*

A) $12s^{20}t^4+(p-3)$

B) $81s^5t^4+(p-3)$

C) $81s^{20}t^4+(p-3)$

D) $12s^5t^4+(p-3)$

7. $\frac{1}{\frac{1}{x+2}+\frac{1}{x+4}}$

Which of the following is equivalent to the expression above if $x>0$? *(no calculator)*

A) $\frac{x^2+6x+8}{2x+6}$

B) $\frac{2x+6}{x^2+6x+8}$

C) $2x+6$

D) x^2+6x+8

8. $\dfrac{\left(x^8y^8z^8\right)^2}{\left(x^9y^9z^9\right)^3}$

Which of the following is equivalent to the expression above? *(no calculator)*

A) $(x^{10}y^{10}z^{10})\left(x^{-12}y^{-12}z^{-12}\right)$

B) $\dfrac{\left(x^2y^2z^2\right)^8}{\left(x^2y^2z^2\right)^6}$

C) $\dfrac{1}{x^{17}y^{17}z^{17}}$

D) $\left(x^4y^4z^4\right)^4\left(x^{-3}y^{-3}z^{-3}\right)^9$

9. Which of the following is equivalent to $\left(4^a\right)^2$?

(no calculator)

A) 16^{2a}

B) 16^a

C) 8^{2a}

D) 8^a

10. The equation $3^x \times a^x = 27^x$ is true for all values of x. What is the value of a? *(no calculator)*

A) 3

B) 6

C) 9

D) 27